AUDIO MEDIA
Professional Audio in Production

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July 2013
Issue 272

MEET THE TEAM

Deputy Editor
Jory MacKay
jory.mackay@intentmedia.co.uk

Staff Writer
Jake Young
jake.young@intentmedia.co.uk

Managing Editor
Jo Ruddock
jo.ruddock@intentmedia.co.uk

Sales Manager
Graham Kirk
graham.kirk@intentmedia.co.uk

Head of Design & Production
Adam Butler
adam.butler@intentmedia.co.uk

Production Executive
Jason Dowie
jason.dowie@intentmedia.co.uk

Designer
Jat Garcha
jat.garcha@intentmedia.co.uk

Publisher
Steve Connolly
steve.connolly@intentmedia.co.uk

Press releases to:
pressreleases@intentmedia.co.uk

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Sales tel +44 (0)20 7354 6000

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Circulation & Subscription enquiries
Tel: +44 (0)20 7354 6001
email: **lianne.davey@intentmedia.co.uk**

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IN PAUL MAC'S opening words from last month's issue he focused on some themes that I think are incredibly important given the current direction *Audio Media* is heading in: refurbishment and refreshment.

As I'm sure you've noticed in the past two issues, we've decided to perform a bit of a refurbishment on ourselves, adding a fresh new look and reworking some of the sections in the magazine. I'm also sure you've noticed the amount of new faces we've added to the *Audio Media* family, myself included.

Yet beyond the more aesthetic changes, we've stayed true to the core values that have made this magazine what it is today. Inside these pages you'll still find respected industry experts extrapolating on recent trends and testing out some of the latest and greatest gear. And while Paul has moved on from his position as editor, his name will still be popping up in the magazine (be sure to keep a look out for a Final Cut feature from him in next month's issue).

"We've got more exciting changes coming in the next few months, so as I've learned to say, watch this space."

Jake and I have been making the rounds, meeting with people in the industry from manufacturers to distributors. We've already had chats with the fine folks at Sennheiser, Scrub and Merging Technologies (see our new backpage interview on page 50) with more to follow.

We've got more exciting changes coming in the next few months, so as I've learned to say, watch this space.

While Paul certainly has left some big shoes to fill, I'm confident that we've done a good job in keeping up the standard of content that you all expect to find in *Audio Media*. Here's to the future.

Jory MacKay, Deputy Editor

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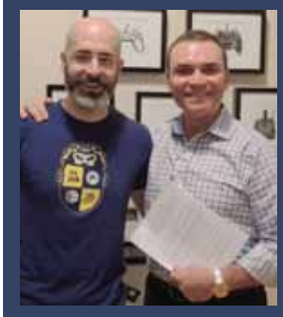
New BEHRINGER recording interface

BEHRINGER's all-new FIREPOWER FCA610 audio recording interface is now shipping. With its low-latency USB or FireWire operation, 6-in/10-out architecture and two Midas-design mic preamps, the FCA610 is the ideal tool for recording musicians who record/edit on their laptops. Powered by FireWire or the included power supply, the FCA610 supports most popular analogue and digital formats including MIDI, in a half-rack form factor. Twenty-four-bit 96kHz A/D-D/A Cirrus Logic reference-class converters ensure pristine recorded performances.

Asked about the FCA610, Christian Stahl, Manager Marketing Communications at MUSIC Group, remarked: "We're excited to share innovative recording products, such as the FCA610, which feature many of the same technologies found in our X32."

The BEHRINGER FCA610 is covered by MUSIC Group's three-year Limited Warranty Program. In addition, customers who register their FCA610 can download the unrestricted version of TRACKTION 4 Audio Production Software free of charge.
www.behringer.com

RØDE purchases FiRe application



RØDE Microphones has purchased the FiRe audio recording application for Apple iOS devices from US-based developer Audiofile Engineering.

Under the terms of the agreement, RØDE has taken complete ownership of the app as well as the fundamental code to continue to refine new software in this growing market sector. In the next few months RØDE will release improved versions of its existing app based on the FiRe platform, RØDE Rec, and is working on new hardware.

"When we first looked at the smartphone market as a development area for RØDE, I knew that it wasn't enough to just make a hardware product. RØDE's goal from day one was to create a complete recording solution – a platform that we can build around," remarked RØDE President Peter Freedman. "I had known and used FiRe for some time and considered it to be the best field recording app available. So in conjunction with its developers, Audiofile Engineering, we built RØDE Rec to further enhance its already impressive audio capabilities, as well as providing high-resolution support for all our hardware products, in addition to the world's first 24/96 field recorder for iOS, the iXY".

"The purchase of the FiRe platform brings all of the IP in-house here at RØDE, allowing us to fully control the development schedule and realise many of the great plans we have for RØDE Rec and our iOS-based customers around the world," Freedman continued.

"All of the features that make FiRe an incredibly powerful field recorder for iOS make it a perfect fit for RØDE," commented Matthew Foust, Managing Partner at Audiofile Engineering. "Creating great audio software is our passion, so we're elated to see RØDE unite FiRe with best-in-class accessories and leverage their global presence to put it in the hands of even more people around the world."

Audiofile Engineering will continue to support FiRE customers while the transition is occurring.
www.rodemic.com

Nugen Audio loudness plug-ins support Pro Tools 11

NUGEN Audio has upgraded its line of audio metering plug-ins to support the Avid AAX 64-bit format for both PC and Mac. The upgrade makes Nugen Audio's plug-ins among the first in the industry to be compatible with Avid Pro Tools 11.

"At its core, AAX has been designed for evolution and expansion. AAX has since become the standard for many of our customers who put Avid's editing software at the centre of their operations," said Jon Schorah, Creative Director of Nugen Audio. "By supporting Avid as it moves to a new generation of DAWs, we're also future-proofing our products for our customers."

Nugen Audio has upgraded its VisLM visual loudness monitoring tool, the LM-Correct loudness analysis and correction tool, and its True-Peak limiter, ISL. The upgrade is available now and is free for all current users.
www.nugenaudio.com

Yamaha StageMix Version 4

VERSION 4 of Yamaha's StageMix iPad app is now available to download for free from the iTunes Store.

Available for the CL series, M7CL and LS9 digital mixing consoles, StageMix 4 delivers numerous new features and refinements, giving users even more control and flexibility when working remotely from the console.

These include Dynamics Parameter Editing, Output Port Delay Editing, Output Port Phase, Output Port Levels (Gain/Attenuation), Parametric EQ Copy/Paste, Phantom Power Switching, Mix Send Pre/Post Switching, HPF Slope Parameter (CL V1.5 only), Retina Display Support.

Audio engineers throughout the world have adopted StageMix. As well as for setting up monitor systems, many are using it for more advanced mixing applications.
www.yamahaproaudio.com

JZ Microphones announces new budget mic range

JZ Microphones has expanded its product portfolio with a new budget microphone range, named J. The first member of the family is the J1 (pictured), which is housed in a flat grey coloured body with a shockmount included in the set. A mesh grill covers the brand new capsule with an active diaphragm of 21mm.

The J1 is handcrafted in Latvia under the supervision of Juris Zarins, the company's Chief Engineer, using JZ Microphones' Golden Drop technology. It is shipping now.

JZ has also recently taken over distribution and manufacturing control of the Flamingo microphone series, thus placing all of the designer's microphones under one company. Estonian company Violet Design previously held distribution rights for the premium microphone series.

The Flamingo series consists of four microphones: Flamingo ME, Flamingo 47, Flamingo 67 and Flamingo Stereo. The move means all models will now be available across Europe, Asia, Australia and South America, as well as in the US.

These developments come as JZ released details of plans to establish a museum of studio microphones in Riga, Latvia. The exhibition will include exhibits from Zarins' personal collection as well as prototypes of JZ Microphones' products.

www.jzmic.com

Barefoot Sound upgrades studio monitors

BAREFOOT Sound and KMR have announced the second generation of the MicroMain27 and MicroMain35 studio monitors.

The Barefoot Sound MicroMain27 Gen2 and MicroMain35 Gen2 feature brand new technology taken from the flagship MiniMain12, such as high-quality converters, a 1in ring radiator tweeter, 5.25in extended-range neodymium mid and bass drivers, Hypex amplification, AES digital inputs, 1dB stepped attenuator and advanced DSP integration.

Both the MicroMain27 Gen2 and MicroMain35 Gen2 feature the same dual force cancelling subwoofers as their predecessors. However, the compact studio monitors now feature new DSP to change the voicing and characteristics of classic studio reference nearfield monitors such as NS10M and Auratones as well as consumer hi-fi and flat.

All models are easily selectable through the included wired remote.

www.kmraudio.com

Telefunken M82 microphone available from Unity

THE Telefunken Elektroakustik M82 was created to provide users with an alternative to the industry-standard kick drum and large diaphragm dynamic microphones. The M82 is a hand-assembled dynamic microphone that features a 35mm diaphragm with superb low-frequency capabilities.

It is an end-address microphone, meaning that users point the top portion of the head grille at their source. The device features two separate EQ switches: KICK EQ and HIGH BOOST. These two function independently of each other, which yields four unique settings, giving the user the ability to tailor the microphone's response to the source with ease.

On kick drum, the M82 is described as fat and punchy. When placed just inside the hole of the resonant head, the M82's tailored frequency response captures both the beater attack and shell resonance without the need for multiple microphones.

Telefunken's M80 is also now available from Unity Audio in a range of colours and finishes.

www.unityaudio.co.uk

Waves recreates RS56

WAVES Audio and long-term collaborator Abbey Road Studios have introduced the RS56 Passive EQ plug-in, based on the original RS56 Universal Tone Control, used on a multitude of classic recordings.

A passive equaliser, the RS56 Universal Tone Control was originally introduced in the early 1950s and used at Abbey Road Studios to prepare recordings for the record-lathe, as part of the process we now know as mastering. Later, Abbey Road's pop engineers began using the RS56 for studio recordings because of its ability to manipulate sound – unlike the basic treble and bass EQs found on the mixing consoles at the time. This earned it the nickname 'The Curve Bender'.

Waves and Abbey Road Studios have faithfully recreated the magic of the RS56, using circuit-modelling techniques based on the original schematics. Like its hardware predecessor, the Waves Abbey Road RS56 passive EQ plug-in features three bands with four selectable centre frequencies for each, and six different filter types, plus independent or linked control over the left and right channels.

Abbey Road Studios' Director of Engineering Peter Cobbin said: "The RS56 plug-in has already joined the ranks of my go-to list, as it delivers an inviting sonic character along with a logical functionality. I would encourage any engineer to get creative with some lovely old-time curve bending, and tap into this fabulous piece of Abbey Road heritage."

www.waves.com

Native Instruments introduces TRAKTOR KONTROL Z1

NATIVE Instruments has announced TRAKTOR KONTROL Z1, a small professional mixer and audio interface that natively connects to both the TRAKTOR DJ App for iPad and iPhone and TRAKTOR PRO 2.

TRAKTOR KONTROL Z1 provides TRAKTOR DJ users with an all-in-one two-channel mixer, controller, and 24-bit soundcard. Its dedicated faders, filter and effects controls, and three-band EQ for each channel automatically map to the software, instantly giving DJs added tactile control over their iPad, iPad mini, iPhone and iPod touch setups. The Z1's cue section delivers headphone pre-listening of the next track, while the built-in 24-bit soundcard provides club-ready sound without the need for additional hardware. With iPad, iPad mini, iPhone and iPod touch turned on, TRAKTOR KONTROL Z1 keeps the device charged.

Thanks to plug-and-play connectivity with TRAKTOR and the included TRAKTOR LE software, DJs can immediately start mixing on their Mac or PC system. When combined with TRAKTOR KONTROL X1 and F1 controllers, TRAKTOR KONTROL Z1 becomes part of a professional DJ setup including full control of TRAKTOR's Remix Decks and transport functionality.

TRAKTOR KONTROL Z1 connects to iPad, iPad mini, iPhone or iPod touch with an included 30-pin connector. Using the Z1 with iPad fourth generation, iPad mini, iPhone 5 or iPod touch fifth generation requires an Apple Lightning to 30-pin Adapter, which must be purchased separately from Apple.

www.native-instruments.com

Prime Loops releases R&B sample pack

NEW sample pack R&B ICONZ from Prime Loops has been professionally produced and mastered to deliver 24-bit audio content. Available via direct download from www.primeloops.com, R&B ICONZ will add 570MB of R&B to a sample library. Featuring a total of 137 loops and an additional 30 one-shots, users can build from a selection of synths, basslines, and percussion. Prime Loops has engineered this pack to sync easily with a mix – all users have to do is select a chosen sample from the download folder, drag and drop it into any major software and it will sync automatically. If the tempo needs changing, click the end of the stem and adjust its length to find the desired BPM.

www.primeloops.com

Vienna products support Pro Tools 11

ALL of Vienna Symphonic Library's products fully support Avid's new plug-in format AAX Native 64. Users of products including Vienna Instruments Collections and Single Instruments, Vienna Instruments PRO, Vienna Ensemble PRO 5, Vienna MIR PRO, and Vienna Suite can find the updated software installers in Vienna's User Area.

www.vsl.co.at

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>>> INDUSTRY

Electra Partners acquires Allen & Heath

ELECTRA Partners has acquired mixing console manufacturer Allen & Heath from D&M Holdings. Electra Private Equity and Allen & Heath's management have provided £43 million of equity and debt. Allen & Heath's existing team and distribution networks will remain in place.

Commenting on this acquisition, Alex Fortescue, Chief Investment Partner at Electra Partners, said: "The ability to invest across the capital structure, in this case funding both the equity and debt instruments, is a great example of Electra's flexible investment mandate being put to work to ensure a swift completion for the vendor and a straightforward structure for the business to capitalise on both organic and acquisitive growth opportunities."

Charles Elkington, Investment Partner at Electra Partners, added: "Allen & Heath is a leader in a niche market with an excellent track record of year-on-year growth. We believe that the company has a bright future and we will be looking to work with Glenn Rogers and his team to grow the business through further investment in new product development, improved marketing and distribution, and through acquisition."

Glenn Rogers (pictured), Managing Director at Allen & Heath, said: "We are very excited about working with Electra Partners and the opportunities it presents for the next phase of Allen & Heath's growth. We have an excellent catalogue of existing products and a number of exciting prospects in development. We see opportunity for expansion into new areas and look forward to building Allen & Heath's long-term future alongside Electra Partners."

www.allen-heath.com
www.electrapartners.com

>>> CINEMA

DPA mics found in Now You See Me

THE all-star lead actors of the new Box Office sci-fi hit *Now You See Me* were equipped with DPA d:fine headset microphones for the pivotal presentation scenes.

The d:fines were chosen primarily for the aesthetic appeal to the Art Director, who was looking for a modern microphone that could be seen but not held. Forgoing the foam windscreen that typically comes with the d:fine, Production Sound Mixer Danny Michael, CAS, presented the director with the exposed grill version of the microphone.

"The Director asked the Production Designer and myself to find a few solutions to meet his needs," said Michael. "We received a few different samples, but I made sure to include the d:fine as it was the one that I felt would provide the best sound. Since it was an artistic decision, I left it to the Director to make the final call. It was very fortunate for me that he selected the one I wanted most."

In addition to its aesthetic and sound qualities, the d:fine microphones provided Michael with the durability that is necessary for long movie shoots. The level of comfort found with the microphones also meant the actors could wear them all day.

"The d:fines really held up for what we were doing," continues Michael. "I never had to replace a head and the cables were of good strength. The microphones were certainly being used quite a bit and they interfaced quite nicely with the transmitter that I used, so it was all great. The actors all wore the mics for hours at a time – Dave [Franco] seemed to wear his all day – and I didn't get any complaints that they provided any discomfort. Sometimes, the best thing you can say is that you never had a problem."

Now a DPA convert, Michael is already using the d:fines on the set of his next film, *This is Where I Leave You*, which is currently filming.

www.dpamicrophones.com

>>> POST

Molinare reveals new audio facilities

FILM and broadcast post-production house Molinare has unveiled its newly refurbished Dubbing Theatres. The suite upgrades include an Avid S5 Fusion control surface with DSP, Pro Tools HDX and version 10 software.

Scrub, a division of HHB Communications, provided Molinare's film and broadcast post-production facilities with a fully featured 32-Fader Avid S5 Fusion control surface and Pro Tools upgrades for its Dolby-approved flagship Dubbing Theatre A.

Munro Acoustics was engaged to redesign the existing Theatre, with the addition of 7.1 sound monitoring and a five-metre projection screen, revitalising the room to give a spacious, modern feel. Molinare's engineering team were aided by system design and integration specialist Absolute Cad.

Julie Parmenter, MD at Molinare, commented: "Our new audio suites represent a significant investment in our facilities and will complement our multi-award winning sound team to give the film and broadcasting industry the very best post-technology in Soho."

The setup in Molinare's Dubbing Theatre B has also been renewed with a Pro Tools HDX upgrade and a matching JBL Screen Array surround system.

The S5 Fusion offers a powerful, dedicated digital signal processing (DSP) engine and EUCON Hybrid control to record and mix EUCON-enabled digital audio workstation (DAW) – such as Pro Tools – projects. The console accelerates the overall mixing process, giving users complete control and flexibility and providing instant visual feedback on metering, track info, routing and more through high-resolution screens. Users can save the position of sources on the surface at any given time and recall them at a later time; they can also control any number of faders from a single strip through Control Groups.

The upgrade to Avid S5 Fusion means Molinare is now fully compatible with the full Avid System 5 Family of movie consoles, enabling it to work on collaborations with film studios through this new streamlined audio workflow.

The investment in the dubbing theatres is part of the post-production facility's renewal after a consortium headed by former Chief Executive Steve Milne and new MD Julie Parmenter bought Molinare last year.

www.molinare.co.uk

>>> RECORDING

New SSL studio for west London

BLUE Box Studios has opened its doors in Acton, London W3, with a well-known figure at the helm. Nikki Affleck (pictured) will be familiar to anyone involved in the studio and record industry over the past 25 years, having managed studios since 1989 before a move into A&R co-ordination, working at Universal then Sony Music.

"So many studios have closed in west London that in my work as A&R co-ordinator, it was proving really difficult to hire a good studio where my bands could write and record," she said. "Most of the record companies are west London-based, plus many producers and engineers seem to live in this part of town, yet there are now only a couple of commercial studios for hire."

The facility, designed by Munro Acoustics, offers two production rooms with vocal booths, an SSL studio and a video-editing suite. Affleck polled a group of engineers and producers to find out which equipment they most like to work with. This sees the studios installed with an SSL AWS 924 console, Focal, KRK and Yamaha monitoring, and Apple computers running Pro Tools, Logic, Waves, Avid Media Composer 6, etc. Outboard equipment includes an Avalon VT747sp stereo EQ and compressor, a UA 1176, an Emperical Labs EL8X, Tube Tech CL1B, SSL X Rack and Neve preamps and EQs, plus a selection of AKG, Shure, Sennheiser and Neumann mics.

Munro Acoustics' Andy Munro said: "A rebalancing of economics has had to take place in the recording industry, and Blue Box has got its sums right. Their vision of providing smaller writing and recording spaces is right on track in today's market, where the traditional recording model doesn't generally apply anymore."

www.theblueboxstudios.com

>>> LIVE

Pet Shop Boys patched with Optocore

MIXING the Pet Shop Boys' Electric world tour, the band's long-term sound engineers Holger Schwark (FOH), and Seamus Fenton (monitors) have been relying on an Optocore multicore system to transfer signals, and keep the sound in the digital domain.

Schwark (pictured) has been carrying two Optocore DD4ME MADI converters in his compact FOH side rack for some time, with a third DD4ME at the monitor desk. Providing production on the tour is Capital Sound Hire.

Both engineers have chosen DiGiCo SD10-24 consoles, along with a DiGiCo SD-Rack at the monitor desk. While these consoles come equipped with an optical loop interface, they decided to run Optocore as an entirely independent network, giving them greater flexibility to patch signals between their 'playback world', the SD-Rack, the two mixing desks, a MADI-equipped Mac Mini at FOH, FX units at FOH, and an independent additional MADI output for occasional multichannel recording – keeping everything digital.

Playing through the new Nexo STM PA, which Capital Sound Hire recently invested in, at London's O2 Arena the sound team ensured a dynamic set delivery leading up to the finale that included hits such as *Always On My Mind* and *West End Girls*.

www.optocore.com

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(Jerry Ibbotson, AudioMedia 2013)

AUDIOMEDIA
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>>> RECORDING

Binaural bliss

By **Jake Young**

CANADIAN singer/songwriter Jain Wells recently performed a live meditation event in London promoting her album *Luminosity One*. The venue was the Temple of Andaz Liverpool Street, a Grade I listed room that was once used by Freemasons of the City.

While Sennheiser RS120 headphones powered the event, Kipper, known mainly through his work with Sting, mixed and produced the album using Sennheiser's flagship HD 800 headphones. "It was like having my favourite speakers strapped to my head," said the producer and musician.

The idea was to to combine binaural beats with a piece of composed music. "I had the idea halfway through that the whole thing was going to be best perceived on headphones," said Kipper. "Why don't we just work on headphones all the time instead of listening on speakers?"

Binaural beats have an effect of synchronising the two hemispheres of the brain. What people experience is a slightly different tone going into each ear. Sending a 300Hz tone into one ear and a 320Hz tone into the other ear, both sides of the brain will perceive the difference between the two tones, which puts people into an altered state.

Alongside the HD 800s, Kipper enjoyed using the Sennheiser MK 4 condenser mic on acoustic guitar. "All I'm ever trying to do with acoustic instruments is to capture what they sound like in the room," he said. "At the end of the day it's the musician that makes the sound and we're just trying to capture it, especially in this kind of instance – it's a very real record."

Kipper is producing Wells' next pop album for release later this year. "I do like the idea of using this binaural beats technology behind some normal songs, just in certain sections to have something that gets people to actively concentrate," he said. "Why not? It's cheaper and safer than drugs."

www.sennheiser.com

Photo: Richard Minter

>>> EVENT

Pro Sound Awards: buy your tickets now!

LOBBYING has closed, the shortlist is being drawn up and the extensive judging panel has been confirmed. These are just a few of the developments behind the scenes at Pro Sound Awards HQ this month.

Tickets for the 19 September event, which will be held at the Ministry of Sound in London, are now available from www.prosoundawards.com and a few sponsorship opportunites remain. Contact james.robins@intentmedia.co.uk or sarah.harris@intentmedia.co.uk for more details.

Look out for the full awards shortlist in next month's edition of *Audio Media*.

www.prosoundawards.com

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>>> INSTALLATION

University of Kent sources Genelec speakers

LOCATED on the site of Chatham's Historic Dockyard is a new facility that has been built to service the needs of the University of Kent's music department. Host to a collection of studios, rehearsal rooms and live space, the £5 million Medway Campus provides industry-standard facilities for the university's music and audio arts students. Designed by pro-audio specialist DACS, the installation features a range of professional studio monitors from Genelec, supplied to DACS by Genelec's UK distributor Source Distribution.

The suite of studios housed in the Fire Station building now feature an all-Genelec setup. DACS opted for the biamplified 8030 speakers here as their size suits the studios which are used for Foley and post production. "We use one space in the Fire Station as an Ambisonic studio which is quite flexible in how we can arrange it," said Tim Howle, Professor of Contemporary Music at the university. "In this area we have 16 Genelec 8020s which can be setup as an Octophonic studio or with all 16 functioning for the full Ambisonic experience."

The Ambisonic Studio gives composers at the university the option to record in what is commonly known as 3D audio. This is by no means the norm in a higher education facility and is seen as a big draw for potential students. It also allows the institution to conduct research in Ambisonic and other multi-speaker techniques.

Two post-production suites are also housed in the Fire Station with the first featuring a C24 Pro Tools system also running Logic Pro, Live, a range of outboard effects and processing units, and a quadraphonic Genelec monitoring system. The second of these studios features a Digidesign 002 digital mixing console, an Apple Mac G5 computer workstation, primarily running Pro Tools 8, and a Novation X-Station synthesiser.

In the second phase of the project in the adjoining Foundry building, the control room uses a high-performance 5.1 setup, comprising five 1037s and one 7071 subwoofer, both by Genelec. This combines with a Merging Technologies Horus A/D-D/A interface and an SSL Matrix desk.

The final section of the installation is the Music and Audio Arts Sound Theatre where the diffusion system is assembled. Made up of four Genelec 1038s, one 7071, one 7060 and 20 8040s, the system is fully portable and supported by an OSC controller.

This system can be set up in any format – multichannel, quad, 5.1, Octophonic or Ambisonic.

www.genelec.com
www.dacs-audio.com
www.sourcedistribution.co.uk

>>> EVENT

PLASA introduces AudioLab

PLASA Events has revealed the first details of AudioLab 2013, a new attraction that will see the creation of a pro-audio arena, theatre, and interactive lab.

Taking place at ExCeL London during the 6-9 October PLASA show, the AudioLab Arena is a purpose-built space for large-format loudspeaker demonstrations, shoot-outs of club sound and PA systems, and private exclusive demo rooms. The AudioLab Theatre is an audio school with three expert classes; Live Sound, Installed Sound and The Sound Business.

The third new attraction is AudioLab Interactive, a myth-busting laboratory where visitors can see live experiments on a range of pro-audio equipment.

www.plasashow.com

>>> POST

INK Production selects Meyer Sound for Dolby Atmos mixing room

PARIS-BASED film/video post-production facility INK Production has installed Meyer Sound cinema loudspeakers for use in its Dolby Atmos mixing room, the first of its kind in France.

The decision to specify Meyer Sound monitoring was made by Alexandre Widmer, INK Production's General Manager and Cinema Sound Editor and Mixer.

The monitoring system in the high-ceilinged cinema mixing room consists of three Acheron 80 screen channel speakers, four X-800C cinema subs, and 26 HMS-10 cinema surround loudspeakers installed laterally and overhead to Dolby Atmos specifications. In addition, two X-400C cinema subwoofers implement surround low-end management. The system is optimised by a Galileo loudspeaker management system with one Galileo 408 and one Galileo 616 processor.

"The low frequencies are tight, with fast transients, while the high frequencies are accurate but never aggressive or abrasive," observed Widmer. "The sound is uniformly consistent, easy to work with, and less fatiguing than with the old 'industry standard' systems."

Paris-based 44.1, a systems integrator specialising in film and video production technologies, rewired the room and supplied the Meyer Sound loudspeakers and an Avid System 5 console.

"Whenever any film professionals come into the room they always leave satisfied with what they've heard," reported Widmer.

Projects mixed in the new facility include hit comedy *Les Profs* and the yet-to-be released *Un Intervalle de 9 Minutes*. The first Dolby Atmos mix will be *En Solitaire*, directed by Christophe Offenstein.

www.meyersound.com

>>> RECORDING

IADT chooses Radial

THE International Academy of Design and Technology in Las Vegas has recently opened the Vegas View recording studio. The project was conceived and overseen by Studio Designer and Manager Robert Ferrari, who worked with the Custom Shop at Radial Engineering in Port Coquitlam, British Columbia, Canada.

"When it came time to order the connection panels for all the spaces my first call was to Radial," said Ferrari. "It could not have been any smoother or easier for us as the end user and installation team. In this day and age Radial is still providing customers a service that has become a lost art."

www.radialeng.com

Success brews at ABTT

By Jake Young

Photo: Laura Braun

THE ABTT 2013 Theatre Show sold out last month with 10 percent more exhibitors compared with 2012. Visitor numbers grew by about four percent over the previous year, which was the first time it was held at The Old Truman Brewery in London's East End. Almost a quarter of all exhibitors chose the ABTT as a launchpad for new products in the UK, while a two-day seminar programme offered visitors the chance to take part in 24 presentations and debates. The most popular seminar was the launch of the new edition of the Technical Standards for Places of Entertainment 2013, which has been developed by a standing committee of representatives from the Association of British Theatre Technicians, the Chartered Institute of Environmental Health, the District Surveyors Association, the Institute of Licensing and other industry organisations.

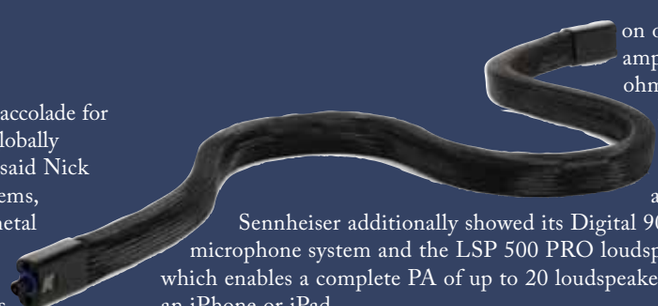
Visitors made the most of the redesigned showfloor area: two new initiatives – the Market Place and Village Green – were met with particularly positive responses. In the Market Place section of the Blue Hall, a collection of small booths enabled a wide range of theatrical suppliers and associations to present their services. The Village Green, meanwhile, became a central area for visitors to meet and network.

Show Director Roger Fox was particularly pleased with the response of exhibitors. "A common theme I keep hearing is that the visitors are exactly the sort of people they hoped to meet," he said.

>>> AWARD

Twist and shout

Sennheiser received the ABTT 2013 Sound Product of the Year accolade for the Anakonda KAN200 from K-array, which the manufacturer globally distributes. "It's a bendy speaker, so you can tie it up in knots," said Nick Pemberton, Business Development Manager – Integrated Systems, Sennheiser UK. "It employs one-inch drivers spaced in a big metal cage every 30cm. Dispersion characteristics are about 160 degrees horizontal by 10 degrees vertical, each unit is two metres long and users can connect 16 of them to run 32 metres on one side of a K-array amplifier running at 2 ohms. It's perfect for running round the front of the stage, under a balcony or anywhere weird."



Sennheiser additionally showed its Digital 9000 wireless microphone system and the LSP 500 PRO loudspeaker, the latter of which enables a complete PA of up to 20 loudspeakers to be controlled by an iPhone or iPad.

>>> SHOWFLOOR

Mixing it up

While theatre sound design and rental company Autograph was displaying the new DiGiCo Theatre software for the SD9 and SD10 mixing desks, Yamaha was showing CL Series consoles, namely the CL1, CL3 and CL5 as well as the Rio3224-D and Rio1608-D I/O units. "It's a good show for us because we get to have contact with some of the theatre engineers that we wouldn't normally get to speak to," said Richard Soper, Regional Manager – North, Yamaha Commercial Audio.

Photo: Laura Braun

The d&b audiotechnik team were on hand to support customers wanting to use Version 7 of ArrayCalc, the manufacturer's acoustic simulation tool that achieves a room full of sound. "The ArrayCalc V7 represents a big step forward in the world of the acoustic simulation tool," explained Oran Burns of d&b Education and Application Support. "It includes functionality to perform acoustic simulations with a number of d&b point source loudspeakers. ArrayCalc V7 betters previous versions in several ways: most significantly it simplifies the process of creating remote control workspaces for line arrays as well as point sources, via an export function into the d&b R1 Remote control software."

Distributer Polar Audio exhibited the beyerdynamic TG 1000 digital wireless system, which covers 319MHz of the UHF bandwidth (470-789MHz). Another new product was the Aviom A360 Personal Mixer. "Aviom has upgraded the A-16II so you have access to 64 channels via a piece of software or 32 channels via the unit itself," said Dave Ball, Business Development Manager, Polar Audio.

www.abtttheatreshow.org.uk

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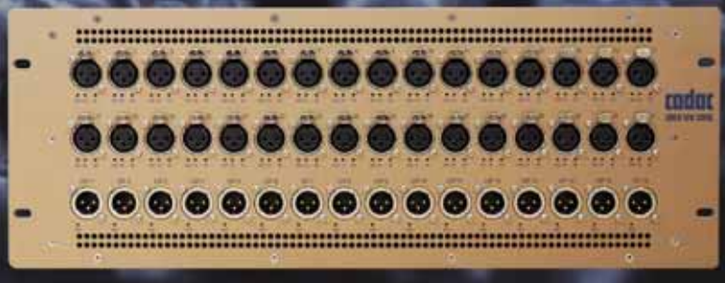

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WE LISTEN

InfoComm impresses

Another bumper year of product launches and educational opportunities kept visitors busy in Florida

IT was another year of growth for InfoComm with more than 35,000 people attending, representing a 2.5 percent increase over the 2012 event. They were here to see the 937 exhibitors occupying more than 470,000 net square feet of exhibit and special events space and take part in the industry training on offer. This year, 237 AV professionals passed the Certified Technology Specialist (CTS) exam onsite, a new record. Twenty-five professionals passed the CTS-D exam and 14 earned the CTS-I credential.

SHOWFLOOR SUCCESS

Alcons Audio USA showcased products based around the company's new Pro-Ribbon technology, which uses drivers that offer 90 degree horizontal coverage. Features of the company's stand included Sentinel amplified loudspeaker controllers, with 4-in/4-out, 192kHz AES/EBU inputs, Linux-based processor control, full colour touchscreen control, and SIS dynamic cable compensation. Also on show was a preview of the forthcoming RR12 horizontal pro-ribbon array system.

Allen & Heath unveiled a new generation of its industry classic MixWizard range. Comprising the WZ4 16:2, WZ4 12:2 and WZ4 14:4:2, fourth generation MixWizards feature enhanced styling and improved performance and functionality, including EQ_ in/out switching and new dual digital FX engines on the 16:2 and 12:2 models. An optional USB multitrack recording and playback interface card are also available. The manufacturer also launched the GLD-112 mixer. This is a larger version of the GLD-80, featuring an extra bank comprising eight control strips, increasing the channel count to 28 fader strips in four layers. It offers a dedicated shelf to hold an iPad running the GLD Remote app.

Bose used the Florida show to expand its RoomMatch family – some 22 new array module loudspeakers with horizontally asymmetrical coverage patterns were introduced. The modules feature the industry's only large-format asymmetrical waveguides, with pattern control down to 800Hz, which improve vocal clarity by reducing room reflections in the critical 1-4kHz vocal intelligibility range. All RoomMatch full-range modules utilise six Bose EMB2 extended mid-range compression drivers with 2in voice coils for the high frequencies. and dual Bose LF10 high-excursion, 10in woofers with 3in voice coils for the low frequencies.

Clear-Com released its RS-701 beltpack, the first model in a new line of RS-700 Series wired, analogue partyline beltpacks. The RS-700 Series beltpacks are designed to be rugged and reliable enough to withstand challenging production environments. It is a single channel beltpack, equipped with an XLR-3 line connector that combines high headroom with low-noise audio. Its wide dynamic range and audio contouring enable intelligible voice communication for every audio level.

"The introduction of the RS-701 beltpack is a significant milestone in Clear-Com's nearly 50-year history," said Bob Boster, President of Clear-Com. "The evolution of our analogue beltpack is primarily based on continuous customer feedback in regards to existing and legacy beltpacks as well as on the collective knowledge, experience and expertise of the Clear-Com team."

Harman Professional used InfoComm to announce that it had agreed a comprehensive technology licensing agreement with Oxford Digital Limited, granting the rights to use Oxford Digital's proprietary filter technologies in AKG,

DEMO ROOMS

As ever at InfoComm, the audio demo rooms proved popular. Adamson demonstrated its Point Concentric line for the first time, as well as its Metrix line source and M series monitors.

Martin Audio was demoing its MLA Mini, which it launched at Prolight + Sound. Managing Director Anthony Taylor pointed out that the original MLA, the MLA Compact and now the MLA Mini have all won awards.

Beam steering and shaping pioneer Duran Audio announced the release of version 4.0 of its free DDA (Digital Directivity Analysis) electroacoustic design software. Unlike previous versions of the package, any speakers for which CLF (common loudspeaker format) data is available – not just Duran Audio's – can be modelled in DDA 4.0.

Meyer Sound was showing the new Compass 3.0 control software, which serves as the primary interface for users of the company's Galileo and Galileo Callisto loudspeaker management systems, CAL column array loudspeakers, and Compass RMS, which provides monitoring functionality. Compass 3.0 is said to simplify and streamline loudspeaker set-up and control.

BSS, Crown, dbx, JBL, Lexicon, Soundcraft, and Studer professional audio products.

"Harman's determination to provide audio professionals with professional-grade tools that couple excellent sound and improved productivity drives us to partner with category leaders like Oxford Digital. We are pleased and proud to announce this exclusive licensing agreement in the professional audio marketplace," noted Mark Ureda, Vice President, Strategy and Technology for the Harman Professional Division.

Optocore presented its new generic X6R-FX-INTERCOM-IC44 and V3R-FX-INTERCOM-IC444 interfaces. They are designed specifically for Clear-Com, RTS and AES3-based intercoms. The X6R-FX-INTERCOM-IC444 has eight line inputs, eight line outputs, eight GPI and eight GPO with relay and auxiliary power outputs for external circuits, V3R-FX-INTERCOM-IC444 features four of each. Equipped with 10 or 18 ports of MADI, the switches allow distribution over Cat5 cabling, in addition to MADI-over-fibre and MADI-over-BNC.

Waves Audio showcased the Manny Marroquin Signature Series Collection, custom plug-ins developed in collaboration with mixing engineer Manny Marroquin (Bruno Mars, Alicia Keys, Rihanna). Five-time GRAMMY award-winner Marroquin takes the Waves Signature Series to a new level with six hybrid plug-ins that bring his workflow to users' studios. Alongside his personalised versions of tried-and-true favourites like EQ, reverb, delay and distortion, Manny introduced the Tone Shaper and Triple D plug-ins.

Waves also announced that it is working closely with the AVnu Alliance and is actively encouraging industry adoption of AVnu's standards campaigns. This will include Waves increasing its presence at tradeshows, participating in AVnu's flagship Plug Fest events; encouraging AVB adoption by crossing platform boundaries (when Waves SoundGrid technology runs AVB, it is immediately available to all SoundGrid users); and more.

www.infocommshow.org

DANTE RISING

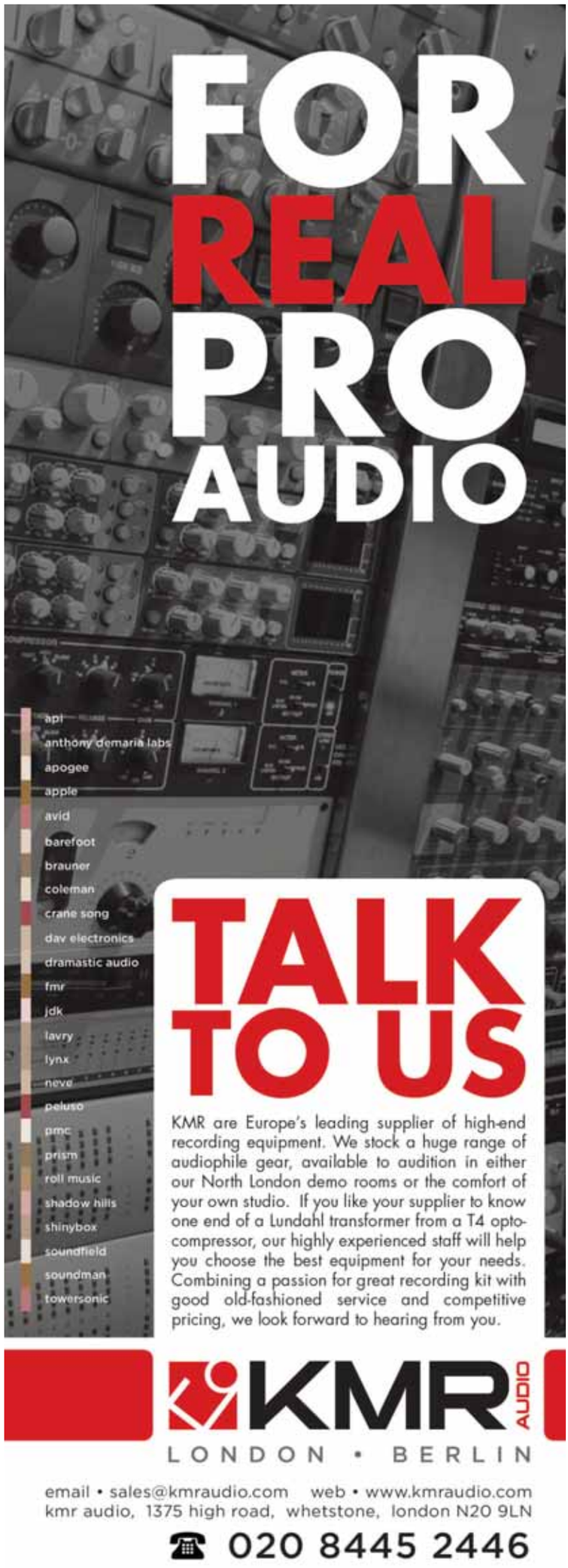
The rise of Dante networking technology was clear for all to see. At the AV Networking World conference on the eve of the show, Lee Ellison, CEO of Dante's creator Audinate, said: "Just 12 months ago when we were at this show, we announced that we had over 50 manufacturers who have adopted Dante. Today it's over 90, and every week we continue to add to the list."

Among the product launches featuring the technology, Attero Tech was showing the world's first Dante wall plate: the unDX2IO, which features two balanced XLR mic/line inputs and two balanced XLR outputs. Because it is PoE powered, audio, control, and power are supplied by a single Cat5 cable.

BSS Audio announced that the Soundweb London BLU-806 and BLU-326 devices, which feature Dante-enabled processors, are now shipping. These have the same configurable signal processing features as the existing BLU-800 and 320 devices, with the addition of Dante digital media networking. Both devices allow 64 incoming and 64 outgoing Dante channels.

Stagetec's Delec NAM (network amplifier module) Installer paging system – which is based on Dante – made its US debut.

Aviom introduced its D800-Dante A-Net Distributor, a product designed in collaboration with Yamaha Commercial Audio Systems. With a D800-Dante A-Net Distributor connected to the Dante network, up to eight Aviom personal mixers can be connected in parallel in an Aviom personal mixing system, eliminating the need for any A-Net cards in the Yamaha console. The D800-Dante distributes power and up to 64 channels of audio to each A360 personal mixer in the system and is also compatible with Aviom's A-16II personal mixers. The distributor also introduces two new features to personal mixing systems using A360 personal mixers. Network Mix Back allows the digital stereo mix from each A360 connected to the D800 to be sent to an AN-16/o v.4 output module for use with wireless transmitters. With Network Mix Back, wireless in-ears can easily be set up off stage and cabling for the personal mixers on stage is simplified. In addition, the D800-Dante serves as a communications hub for iOS devices connected via an Ethernet WiFi router. iOS support for the A360 is scheduled for release in 2014.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A Local Shop

New local TV services are being licensed and launched across the UK. Is this a fresh new democratisation of the UK's broadcast landscape, or a regional initiative that cannot survive regional economics? **Kevin Hilton** reoprts.

IN Britain the word 'local' can have two very different connotations for people. It can be seen as a good thing, as in 'locally sourced produce', something we're all very keen on in light of the recent horsemeat in processed food scandal. But it can also be a bad thing, as in the kind of attitude that tips over into the 'not in my backyard' mentality.

Local media falls somewhere between these extremes. Local newspapers and radio stations are, in principle, seen as necessary. They cover stories that would usually be of limited interest to national services, if they were covered by them at all. Another plus is providing a breeding ground for up-and-coming journalists and presenters.

On the negative side they're often seen as parochial, introspective and less polished than their big city counterparts (although, in most cases, that last one is spurious and unfair).

Both sectors continue to face challenges. Online news publications have hit local papers hard. Local radio has long been maligned; critics question why the BBC continues to support its regionalised stations, while local commercial radio exists largely in name only after the bigger media groups centralised operations, paying lip service to their locations with specific news bulletins and traffic information.

DIGITAL LAUNCHES

None of this would appear particularly encouraging for the new breed of digital local TV services that are soon to be launched in the UK. These are being licensed by broadcast regulator Ofcom and will be transmitted on the free-to-air Freeview platform. Local digital television programme services (L-DTPS) were proposed as part of the coalition government's overall policy to expand digital media and technologies in the UK, including broadband and DAB.

Locations for the first phase of L-DTPS were announced in May 2012, with licences subsequently awarded to 19 operators; among the cities due to have new services by the end of the year are Belfast, Birmingham, Cardiff, Edinburgh, Leeds, London, Manchester, Oxford and Southampton. Phase two was announced in March 2013, with Aberdeen, Barnstaple, Cambridge, Guildford, Middlesbrough, Stratford-upon-Avon, Swansea, Tonbridge and York up for grabs. Once awarded these should begin transmissions by December 2014.

Local TV is not a new addition to the British media landscape. The Oxford Channel launched in 1999 on analogue terrestrial frequencies under a restricted service licence (RSL). Later known as Six TV the station broadcast local news, sports coverage and features to Southampton, Portsmouth, and Reading, as well as Oxford. Six TV closed in 2009 as the analogue switch-off approached; an unrelated online service, Oxbox, went into operation in 2001 but the City of Dreaming Spires is to get a new digital local broadcaster in the shape of That's Oxford.

The new operators have the option to additionally broadcast using satellite, cable and online connections but primary distribution will be on digital terrestrial TV (DTT). The local multiplex network is being developed and run by Comux UK, a not-for-profit company owned jointly by the licence holders and Canis Media, a specialist in channel launches and EPGs (electronic programme guides).

Comux UK holds a 12-year Ofcom licence and is basing its broadcast operations, housing the servers to feed the local stations, at the Faraday Wharf building on the Innovation Birmingham Campus. It is using media transport technology developed by Nevion to create a network that will interconnect with the rest of Freeview and support cross-carry service data and EPG information.

LOCAL CHOICES

Each local operator will make its own decision about audio but, according to chief technical officer Chris Romilly, Comux UK will be offering stereo audio, which is the transmission standard for standard definition Freeview, probably compressed to 192kbit/s using MPEG compression.

"The launch of local TV stations across the UK is the most significant change to the UK public broadcasting landscape since the launch of Channel Five over 15 years ago," Ed Hall, chief executive and founder of Comux, told an industry event at Liverpool Screen School in April. "We are excited to be working with the local TV operators and Ofcom to make sure UK viewers receive the high-quality TV experience they expect."

That might work as far as the technology and technical presentation side of the new services is concerned but competing with established national and specialist broadcasters is going to be challenging. Especially as bashing the likes of the BBC, ITV, and Channel 4, with all their experience and funding, is akin to a national pastime in the UK.

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COUNTRY OVERVIEW

DESPITE events such as the second annual Prolight + Sound NAMM Russia showing a rise in interest in the country's pro-audio market, the Russian media market is still in dire condition due to rampant piracy of music, movies, and games.

According to official statistics, 99 percent of online media content in Russia is counterfeit with up to seven out of ten citizens stating that they choose to download for free rather than pay for content.

In an interview with *The Hollywood Reporter*, Alexander Akopov, head of TV series producer Amedia, said that the Russian film and TV industry's annual losses from piracy amount to $2 billion.

"The financial losses are just as big as the black market itself. And not only for cinema, but music, literature – everything connected with intellectual property. It's simply impossible to calculate how much we all lose," said Mosfilm Studio's Karen Shakhnazarov in an interview with television network RT.

Further pressure has come from the International Intellectual Property Alliance (IIPA), which includes the Recording Industry Association of America (RIAA) and other copyright organisations. In the group's latest 'Special 301' report, Russia was highlighted as one of the worst countries in the world for protecting intellectual property. "In the last year for which sales numbers are available (2011), the Russian music market contracted by 30 percent and had a total value of a mere $76 million — less than the value of the music market in Poland," said RIAA Executive Vice President, International, Neil Turkewitz.

Responding to these complaints, the Russian government has proposed Bill No. 292521-6: Amendments to the Russian Federation's Laws Protecting Intellectual Property Rights on Information-Telecommunications Networks.

If passed, the bill would, among other things, allow copyright holders to ask the authorities to block entire websites that provide any allegedly pirated content.

The development of further regulations led by minister of culture Vladimir Medinsky, would potentially punish users of torrent tracking websites with a prison sentence of two to five years.

The rampant piracy of content has led many private and foreign investors to pull out of the market entirely. To help stimulate the economy, the Russian government invested over $211 million in the domestic film industry last year alone. Yet even with this high level of commitment and investment, the market share for Russian domestic films is still only around 15 percent.

While this all seems to signal a market in serious decline, the country's exhibition sector has grown rapidly with the upgrading of old cinemas and building of new multiplexes. A recent study published by the European Audiovisual Observatory reported that nearly two-third of Russia's 3,000 screens are now digital, with most of these being 3D-capable. It is also expected that there will be 40 Imax theatres by the end of 2013.

Broadcast Market

Media outlets in Russia are numerous and diverse with TV being the most popular media in the country. A recent survey showed that 74 percent of the population routinely watches national television channels, while 59 percent watch regional.

There are over 330 television channels including three with nationwide coverage. Two of the three main channels, Rossiya and First Channel, are owned by the state and have come under criticism for being too politically biased.

The country is going through the process of switching to digital terrestrial TV broadcast, with plans to invest €10 billion into the transition, which is due for completion by 2015. Radio is also incredibly popular in Russia with three main nationwide radio stations and scores of regional services.

Moscow Open returns to Red Square with QSC

Considered the central square of Moscow and all of Russia, Red Square has been used for a number of events including concerts by Linkin Park, The Prodigy, and Paul McCartney.

Recently, it played host to the annual Moscow Open where 16 basketball teams from across Europe and the USA competed. Russian distributor MixArt supplied a QSC KLA loudspeaker system comprised of two arrays each of three KLA12s and two KLA181 subs.

The QSC line array was flown from a temporary roof erected over the open-air basketball court on the North side of the square. QSC K10 active speakers were used as additional stage wedges and extra two-ton cables were attached to the roof to ensure that the line arrays would remain in position.

Moscow Events supplied the sound reinforcement systems having added the QSC KLA, KW and K Series Actives to their inventory only recently.

The KLA system will be used for on-going open-air streetball games throughout the Moscow Open as well as the associated International Streetball World Championship.

www.qscaudio.com

Second PL+S NAMM Russia a success

Building on the success of last year's inaugural show, the 2013 Prolight + Sound NAMM Russia saw a 49 percent increase in attendance, with the total number of unique visitors coming in at 9,281.

More than 130 companies from nine countries demonstrated their products to the growing Russian audio market, which is estimated at nearly $450 million.

Notable attendees included Sonoruss (L-Acoustics), Ruton S (Electro-Voice), Hi-Tech Media (Bosch), Coda Audio, Martin by Harman, Steinberg, T-Audio, Aris Pro (DiGiCo, d&b audiotechnik, beyerdynamic, Biamp) and MixArt (Allen & Heath, QSC).

"We can see the trade fair growing compared to last year – we see more visitors, and they are business-oriented specialists of the industry," commented Alexander Khorev from Aris Pro.

"The quality of the audience is very high. Next year we are planning to participate in Prolight + Sound NAMM Russia again with our products and within the framework of [the] educational programme."

Besides the expo portion, Prolight + Sound NAMM Russia also featured a number of educational sessions including one entitled 'Ideology of Sound and Music in Film and TV', which was organised by Gennady Borgachev, Director of the Sound Engineers Association of Russia.

www.prolight.messefrankfurt.ru

First Dolby Atmos-ready post-production studio for Russia

The country's first Dolby Atmos-ready post-production studio opened recently in Moscow on land previously occupied by the famous Gorky Film Studio.

The 1,500sqm studio complex, which is part of the NTV-Kino facilities, was planned by world-renowned British acoustic designer, Philip Newell, who was been constructing studios for film post production and music recording for over 40 years. During the year and a half of construction, Joule Newell acted as project manager, monitoring the day-by-day installation of the power systems, data networks and audio systems.

The audio side of the complex comprises seven studios including one Foley, three ADR, two editing rooms and a Dolby Premier certified dubbing theatre that supports all formats including Dolby Atmos.

The first of its kind in Russia, the 120sqm Dolby Premier dubbing studio allows the encoding of movies into both Dolby Atmos, as well as other linear, multichannel audio formats that don't require Dolby encoding.

"It is really a very good complex for post production; it has all the major components, including a world-class mixing room," said Brian Vessa, Chairman of the SMPTE Technology Committee TC-25CSS for digital cinema sound systems.

"The movie companies are paying great attention to soundtrack production now, and having the Dolby Atmos system incorporated into the original design is a significant advantage."

"The interest for Atmos is there and quite significant," added NTV-Kino CEO Alexander Chernyaev. "Representatives from many companies including producers, sound directors and sound engineers, have come to see us and hear first-hand how it is different."

The Foley control room is equipped with multi-format 5.1 monitoring and can be used both for recording and mixing in 5.1 for DVD or TV as well as stem mixing for film and music production.

Flexibility is also the defining factor in the design of the three ADR studios. The control rooms are suitable for all genres of mixing and all feature highly compatible monitoring and Avid Pro Tools HDX systems while the dubbing theatre is equipped with a Euphonix System 5 console.

"We tried to create a studio that would not go out of date for a long time: we built it for the long term. The basic installation should be good for 20, or even 30, years," said Newell.

"This complex allows you to do almost everything with both sound and image, but its other advantage is its maximal flexibility and adaptability to the ever-increasing technical requirements."

General Director: Alexander Chernyaev

Studio Manager: Yury Tsiplakov

www.ntvkino.ru

Sonnox

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AAX DSP

AAX NATIVE

www.sonnox.com

Behind The Scenes

Ahead of his keynote speech at this year's DEVELOP Conference in Brighton, Mark Yeend, Microsoft Game Studios' Content Director, reflects on his journey into game audio, and his current role managing central art and audio teams out of Microsoft's impressive facilities in Redmond.

Mark Yeend
Microsoft Game Studios

Q HOW DID YOU GET INVOLVED WITH GAMES AND WHAT DO YOU ENJOY ABOUT WORKING IN THE INDUSTRY?

A I mostly love the people I get to work with – their creativity, intellect, and drive. Microsoft is pretty awesome in that way. I also love collaborating with our dev' studio partners and vendors, striving to do better than we've ever done with every game. I'm a twin, and also a jazz musician, so I instinctively approach everything as a collaboration.

I'm a drummer, and an early passion for music overtook every other interest throughout my schooling. I studied music theory and MIDI, played in jazz groups and orchestra pits, but my unlikely goal was to be Dave Grohl or Larry Mullen Jr. My first sessions in a real studio triggered an intense curiosity for recording technology and I spent many years on both sides of the console. Having a great time, learning a ton, and impoverished, to my parents' chagrin.

I was an intern then a staff engineer at a local studio. A couple of my clients were game companies who came to the studio for VO, music, and designing simple UI sounds. These were 8-bit, 11kHz days. They offered me a full-time job, and as they grew from 25 to 250 employees I found I had shipped dozens of games and was managing an audio team. I was writing music, directing actors, designing SFX, posting cinematics, directing composers, the gamut. I gained a lot of experience quickly. Then I moved from being a medium fish in a small pond to a tiny fish in a vast sea, when I took a contract sound design role at Microsoft Studios. A year later Xbox hired me as an Audio Director in a central publishing team we call Central Media, then later promoted me to Head of Audio. I've been at Microsoft for six years.

Q WHAT DOES YOUR JOB ROLE INVOLVE DAY TO DAY?

A I have a newly expanded role as Content Director, which combines the Audio and Art teams in Central Media. It's exciting and humbling, and my biggest career challenge to date (not counting my failed attempt at rock superstardom). My eyes are wide open, learning about our amazing Art team – they direct and produce awesome visuals, and are on the bleeding edge for next-gen, from performance capture to procedural tools, you name it. They blow me away on a daily basis. My good days are frequent: I witness creative genius, see the unveiling of gorgeous artwork, hear fresh iconic sound design or a perfectly developed melody. These are the days I get to shout accolades from rooftops and shine a bright spotlight on immensely talented individuals. And those aren't even my best days. My best days are when, on top of the beautiful creative stuff, the Art and Audio teams combine to create franchise-worthy IP pillars, discover pipeline efficiencies, or create new tech. That's when we really push forward.

Q WHY DOES MICROSOFT HAVE A CENTRAL MEDIA TEAM AND WHAT SPREAD OF TALENTS ARE INVOLVED?

A The two main reasons for certain functions to be centralised are quality and simple financials. The quality of individuals' work improves game after game. We build a reliable brain-trust, our expertise gets deeper, our tasks go faster, and we can see and hear the quality improvements in the final product. We can help all teams solve the commonly repeating problems - we probably just solved it six months ago with another team! The financial benefit is really this kind of economy of scale. For example, certain roles may be common but only needed in a short sprint – centralise those, deploy them to multiple titles per year, it's more cost-effective. Another example is specialised tech muscle – host some of this centrally to support many different dev teams, they can use it *à la carte* instead of paying 100% for something they use 10% of the time.

The talents in Central Media Content teams are broad and deep… Focusing specifically on audio here, our Audio Directors do a lot of amazing things that drive quality – they consult with developers, give creative direction, define talent resource needs and budgets, define audio targets for new games, travel, write statements of work for vendor contracts, convince a producer to spend some smart dollars on middleware, travel again, bring Microsoft Research tech in to a game, etc. In addition to five and a half Audio Directors (I'm the half, split with management tasks), we have five or six sound supervisors under Kristofor Mellroth designing audio systems and helping the ADs in various ways. And last year we added Paul Lipson as a Central Music Director and Robert Ridihalgh as a Central Senior Audio Programmer.

For sound design, our SoundLab team and facility are busy and growing. We have 16 acoustically-designed Pro Tools rooms that we staffed with superb contract sound designers at various experience levels. This centralised person-power is deployed to the highest priority games in need – which might entail raw sound effects, post-pro, unique field recordings, or implementation via distributed development. I'm also just kicking off building some new Central Media audio support for our European teams, in the form of a mini-SoundLab in Dublin with four Pro Tools rooms and a blend of full-time and contract audio roles. We're currently recruiting the exact right people for that team. It's going to be really cool.

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This year's DEVELOP conference in Brighton promises to be just as lively and inspirational as ever. As usual, *Audio Media* is the media sponsor of the Audio Track – a day of audio speak from some of the world's most knowledgeable and experienced game sound professionals. For more information and to get your conference pass, go to **www.developconference.com**

Sign up for your digital *AM* at **www.audiomedia.com**

Holiday Season

Jungle

Jerry Ibbotson talks to Jungle's Jim Griffin about his latest audio adventure with Virgin Holidays and the pressures of working in the fast-turnaround advertising post production sector.

A FAMILY pull into a car park in their people carrier. Everything is grey and drab. They slide into a space and the mother of the family, her face a heavy frown, opens her door. The next moment she's poolside at an exotic hotel, diving into the blue water Esther Williams style.

So begins one of the adverts for Virgin Holidays; a through the looking glass-style kaleidoscopic montage that flits from setting to setting. The visuals were directed by renowned music promo wizard Joseph Kahn, who's worked with artists including Britney Spears, Destiny's Child and Dr Dre.

The post production sound-design and mix was done by Jim Griffin of Jungle, who worked on three ads in Virgin Holidays' current campaign, 'Unleash Your Mojo'. He said working with the team at advertising agency M&C Saatchi was a chance he wasn't going to turn down. "The two creatives were Dan McCormack and Luke Boggins who I've worked with before on a Ladbrokes casinos advertising job," says Griffin. "They showed me the visuals for the ads and I jumped at working on them. Joseph Kahn directed them – he did *Toxic* for Britney – and when I saw his stuff I thought, 'I definitely want to do this because the guy is a genius.' It was a no-brainer."

The brief came next, with the creative team going through the visual content and highlighting key points for the sound design. For Griffin, this encouraged him further: "The visuals were so beautiful that I just wanted to make it even more rewarding for the viewer, through the sound design. That was my pure incentive to get on with it."

He was then left alone for a while to work through ideas and sound design elements, though with one small absence. Griffin: "Where practical I like to have the music track first, that way when I build a sound design bed I can see what, tonally, will pop through. Some stuff I'll do will have a musical element to it, and that – as well as a lot of other factors – depends on what key the music is in.. But I started on the first two ads in the series [there are three in total] with no music to go by."

This meant careful planning and thinking ahead, something that's a crucial part of all Griffin's work; not boxing himself into an audio corner. "I produced an A and a B version of each advert. The A version had musical elements in it and then there was a more generic version with fewer musical sound effects. When we did get the music tracks, some of those B versions became the A versions." Comprehensive preparation is an essential aspect of Griffin's work, as much as any favourite plug-in or effects library. He will spend many hours creating sounds but has to be ready to adapt if the client wants something else.

Jim Griffin, Jungle

"When you are doing this kind of advertising sound design you need to think about the practicalities," says Griffin. "You get all this time at the start to do something and then when you have to make changes you have to make them fast and you have to make them sound good. You have to do it in a session with loads of people sitting behind you and in an hour, or maybe half an hour. So it pays to have something up your sleeve."

Griffin has been a DJ in his spare time for years and is seriously into electronic music. This is a definite bonus when working on projects like the dynamic Virgin Holidays ads. "These ads are all about transition," he says. "And I have this library of transitional sounds. I do these really elaborate DJ mixes where I put film dialogue in, drench it in FX, and EQ it. I've got a number of tricks for getting in and out of sections and from one track to the other and making it sound coherent. Not only do I have that library but I've got a lot of experience of that sort of thing so I can do it on the fly quite quickly."

VISUAL IMPACT

Such a rapidly changing set of visuals as the Virgin Holidays ads could strike fear into the heart of a sound designer. But Jim embraced the challenge. "These ads are all about one scene morphing into another, and then another. I think that's where some of the humour and spark of the advert lies. You think, 'Oh wow we've just come from this dull car park into the amazing pool area' or 'We've come up through a log flume and suddenly we're inside a photograph, and now we're playing table tennis on the beach.'"

"You're through the looking glass with it. Those jobs don't come all the time in advertising so when you do get them you've really got to go for it."

The end product had to be a 40-second and 30-second cut. So how long did it take to get there? Griffin: "That's hard to say. Personally, if the conditions were perfect, maybe a day or two depending on how complex it is. But it never works like that. There would be long discussions between Luke, Dan, myself and Estelle Alvarez, the Producer. We'd say things like, 'This bit may be a bit too cartoony. Pull it back and make it more realistic.' Or 'We want to lose that section completely and change it for something else.' So realistically we've been on the project for a couple of months now. But not every day. It would be impossible for me to estimate the number of hours."

After Griffin had put in some hard graft on his own, the creative team from M&C came in for a mix. "We'd have Luke, Dan, and Estelle there. They were the key guys. It wouldn't take that long just to mix all the elements together because I have been chipping away at it over and over again – that can be done in maybe half an hour – but the build up to that is a really long process."

To an outsider it seems like an incredibly intense process for something that only lasts for 40 seconds, made all the more difficult when the sound designer may have to change elements that have taken hours to create. Griffin is philosophical about it: "When they come in and start moving stuff around I find that period quite intense. You like what you've done but they may say, 'Well that bit we love and that bit we want to take out.' You've got to be realistic with this job and there are so many people in the chain of approval. You've got to just go, 'Okay, we'll do something else'. You have to be respectful of that as it's part of the process."

"Advertising sound is frame-accurate. That's the difference between doing long form and short form – the intensity of the process." Jim Griffin

It's also about having quick reactions. Griffin: "When they do decide that they're not certain about something you've worked on for weeks and want to hear an alternative, sometimes you've got to knock something up that sounds just as good as that, but literally on the spot."

One of Griffin's favourite software tools helps out in this situation. "I use Kontakt a lot. I really like the way that works and I can generate interesting stuff on that really quickly."

EVERY SECOND COUNTS

Compared to longer-form projects (which in this situation probably coves anything longer than a minute), advertising sound has a huge amount of time spent on each second of visuals. Griffin believes in structuring the work to save a lot of pain in the later stages.

"Advertising sound is frame-accurate. That's the difference between doing long form and short form – the intensity of the process. With advertising every frame counts. It's a cliché but you really have to wring every bit out of every frame because a lot of money has gone into it... That's the thing that you've got to respect – when you're doing audio you're the last stage of the whole process. These other guys have sat in visual FX suites and editing suites, and have had endless meetings. When they get to you you've got to keep the process going. They don't want you to be in any way a stumbling block to it. You've just got to keep it flowing and keep up the level of perfection, or even make it better.

"The sound designers at Jungle, and in this industry in general, thrive on that pressure... The good thing about doing short form is you can work on it for weeks and then the client can come in for an hour and if everybody's happy, you're done and you're onto something completely different and enjoying that too. It's different for long form – producers and creatives can work on a project for months and months, it's on-going."

But even in as short a project as a 40-second ad, there are bound to be last-minute changes. How does he cope with those? Griffin: "The main things that change last minute are graphics like end-boards or legal stuff on screen. I did the master mix for Nifty (one of the three adverts in the series) without the end board on it. Then they came back and we moved a lion roar eight frames earlier. It's stuff like that."

Griffin is quick to stress that this is an on-going process; there's never just one point where all the big creative decisions are taken or approved. "Even though we have a final session, it's much more than that – more like death by a thousand cuts."

At Jungle, Griffin's other work includes producing the audio on TV promos for clients like MTV, Nickelodeon, Discovery and Channel 4: "That again is a very different process because they will book half a day to do a 40-second clip-based promo. You've got to really get cracking – record the voice, do the sound design, edit the music, lay back to Beta. You've got to be on the ball and that's good practice for the ads – they tend to book loads of time, work at a slower pace, but then you will have these intense moments so it does come in handy."

www.thejunglegroup.co.uk

Max Gilkes,
1 Sonic Productions

1 Sonic Productions

Sonic by the sea

Max Gilkes compares his Brighton studio operation to a Swiss Army Knife, the popular compact pocket accessory that solves many a problem. **Jim Evans** reports.

1 SONIC Productions, housed in a ground floor of a converted factory block close to Brighton city centre offers recording, mixing, mastering, and post-production services and has built a steady client base from within Brighton and beyond. Neighbouring units are occupied by photographers, a carpenter, graphic designers and a toymaker, giving the whole place a creative buzz. 1 Sonic is owned and operated by producer/engineer/musician Max Gilkes who has experience in several key aspects of the music business.

"I did a classical music degree at Birmingham Conservatoire, and while there got involved with bands in the area, including an act signed to EMI to be produced by John Leckie, then producer of the year, and went down to do a couple of days at Abbey Road Studio 2 which was amazing, and a week at Sawmills.

"At that stage I had another band, an acoustic guitar duo called Map, with a buddy of mine from Birmingham. We couldn't get signed so I put a record label together for a release and we did pretty well with that, it still gets used on TV now. That was the start of my getting into the industry side of things. I was always very keen to understand what was going on with the production/recording side, how it all came together. I toured with bands of my own, and did sessions with other people."

Gilkes moved south eight years ago and into Sonic 1's current location in 2009, when as he says, "everything took off". With a client list that includes Ninja Tune, Big Dada, Sony (France), Smart Move Productions, Mr. Bongo, Keep Up, Silverland and Mission, Gilkes is rarely out of the studio. His recent credits have included Fink, Dobie, Roots Manuva, The Skints, Deco Child, Raffertie, Eliza Carthy and Prince Fatty.

The facility itself is mainly used for mastering and mixing, but it also boasts a live room with eight tie-lines that is large enough to record drums.

"I would say that 70 percent of the work here is post production, mastering and mixing," says Gilkes. "Much of my work comes directly from clients which is mostly unattended sessions. I also do a lot of sessions with the artists *in situ*. Every day can be different. This morning I will be recording drums for Grasscut's next album due for release on Ninja later this year."

So there's no shortage of work then? "At the moment things are running well. I don't want to tempt fate, but I have to make myself take the occasional weekend off. For anyone who is self-employed, it's very difficult to turn work down. You tend to work more than you need to, but I'm very grateful and privileged to have the work coming in my direction."

On the technology front, Gilkes' most recent move has been to install SADiE 6 software for mastering and a Prism Sound Orpheus FireWire audio interface. "I

was previously using Peak as a playlist editor and doing most other things on Pro Tools," he explains. "But as it was time for an upgrade I decided to go with a company that I knew I could have a good working relationship with, and one that was also based in the UK."

"The outboard in the studio is primarily for tracking, so there are some nice pres and compressors. I also have a master section by Audient, PMC and Yamaha monitors, Pro Tools, various classic guitar and bass amps and a range of microphones – not to mention an over-used tea pot."

Moving from one software platform to another can be intimidating, but Gilkes says he has found the transition to SADiE 6 far less painful than he anticipated.

"It's always hard work making the transition from one system that you are particularly well versed with to a whole new environment, but SADiE 6 is very intuitive and easy to use," he says. "I'm really enjoying the facilities it provides. The editing facilities, in particular, are great and I like the PQ and DDP tools. However, the sound quality is the most outstanding feature and I am really impressed by that."

"Of course I have my wish-list. And top of that is an analogue console. It would be nice to offer an alternative." Max Gilkes

Regarding the Prism Sound Orpheus FireWire audio interface, he adds: "The studio needed to make a significant step up in convertor quality and Orpheus delivered the transparency and clarity I was looking for, both as an A-D and a D-A converter. It has great sounding pres and I like the interface features for multi-tracking in Pro Tools."

Gilkes is now using SADiE 6 and Orpheus on a variety of projects, including mastering an album for French artist Mayra Andrade on Sony (France), recording tracks for Congo Natty, completing a debut album for Chevron, finishing backline tracking for a band called Bentcousin, which is releasing a three-track single through Team-Love NY, and completing an album for a local Brighton band called the Meow Meows.

And if that work schedule isn't intensive enough, Gilkes is also producing and co-writing with Russell Stone of R&J Stone fame. "The Russell Stone project is very interesting as all tracks are vocal/non-verbal and based on free improvisations." He says. "The album, which is called *HUMU*, is very nearly finished and should be out in September."

Being a sole-operator, Gilkes is wary of over-spending and where possible keeps the overheads to a minimum, while upgrading when he feels the time is right and finances allow. Like many in this business, he is intrigued as to how studios manage to invest mega sums on technology – recording/mixing consoles for example – and still manage to make profits. "Of course I have my wish-list," he says. "And top of that is an analogue console. It would be nice to offer an alternative.

"The majority of the mastering here at present is done within the box, mainly for ease and speed – the words people like to hear. The digital domain can have too many colours to play with which means that you have to be very disciplined in your mind as to how you use those colours. It would be nice to run a bit of the signal through the analogue chain. Another Orpheus would be nice too..."

But right now, he's happy with what he's got, adding: "What's really nice about this studio is that there is a constant throughput of people whether they are coming in for work or just for a chat, there are always things going on. For someone who is passionate about being creative in music I couldn't ask for anything better than that."

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Digital Audio Workstations and Audio Interfaces

Having trouble choosing the right DAW and audio interface for the job? HHB and Scrub DAW Product Specialists **Simon Haycock** and **John Johnson** discuss everything you need to know before buying your latest system...

DIGITAL Audio Workstations provide a sophisticated software platform with an interactive GUI for the recording, mixing and editing of digital audio. Historically, the complexity of digital audio required expensive hardware systems to cope with fast sample rates and large audio files. Due to the accessible power of modern processors, audio engineers can capture multiple tracks of high-quality audio virtually anywhere using a compact audio interface and a laptop computer. On the other end of the spectrum, larger and more sophisticated interfaces offer on-board DSP, capable of catering for an entire studio with hundreds of channels of I/O. Furthermore, with the introduction of large controller-based mixing consoles capable of manipulating 'in-the-box' software functions, the humble DAW has become more centralised in an audio environment than ever before.

AUDIO INTERFACES

Digital Audio Interfaces come in many varieties and tend to be either proprietary to a specific manufacturer, or provide open support (ASIO/CoreAudio) for any DAW running under a certain operating system. This brings the subject of latency into discussion, as proprietary interfaces are commonly optimised for lower latency when used with their matched DAW.

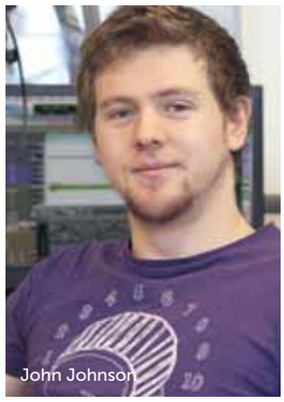
Expandability is another main selling point for an audio interface. Some systems only allow a fixed number of I/O, while others can be expanded with extra I/O interfaces for greater recording and playback capabilities. In some cases up to 12 hardware units can be attached to one host system. Cutting-edge audio distribution technologies such as Dante and AVB, in addition to older platforms like MADI, AES, ADAT, S/PDIF, TDIF, provide for extremely large channel counts on digital connections, which eliminates the need for multiple lines of copper cabling.

Many of the latest audio interfaces also feature superfast Thunderbolt connectivity, which provides data rates of 10 Gbit/s over copper wire and 20 Gbit/s using optical cabling. Several PCI expansion cards can also be installed within a computer to expand channel counts and overall system performance for HD audio and video editing.

Choosing an audio interface with high-quality A-D and D-A conversion is a good starting point, as this will have a dramatic effect on the overall quality of the audio. Depending on the manufacturer and model, an interface tends to be capable of sample rates up to 192kHz and 24-bit resolution. A high-quality microphone preamp is also important; however, many users may choose to add additional external preamps to achieve a desired sound at the beginning of the chain.

DIGITAL AUDIO WORKSTATIONS

The basis of a discussion on choosing the right DAW platform begins with the features contained within the software. While every new Mac computer comes with a free GarageBand licence, features like track counts, editing functions, automation


John Johnson

Simon Haycock

and mixing capabilities are just a few of the discerning factors when deciding on a professional program of choice. Most DAWs are also provided with free plug-in bundles – sometimes up to 50 or more – for adding effects to your multitrack audio.

A large majority of the clients that we interact with at HHB and Scrub tend to be Pro Tools users, as it has become a standard for audio post production. Pro Tools and other DAWs popular in post, such as Nuendo and Pyramix, provide post-specific audio features that streamline the process of creating, mixing or editing audio for TV and film. Some of the latest features provided by these programs are a 24-hour timeline, synchronisation solutions: 9-pin control, video reference locking and time code slaving; and sophisticated tools for surround sound mixing. An increasing number of DAWs also come integrated with streamlined interoperability with video editing programs and 'video satellite' workflow for greater video integration within the audio editing framework.

Expandability is also a consideration when choosing a DAW platform and can greatly affect the initial cost of a system. Additional features from Toolkits, extra power and I/O from additional processing cards, as well as future upgrade paths, are provided by certain programs to ensure that the user can build on their workflow as needed. Many audio post users also require a DAW to provide an optimised workspace for searching through large sound effects libraries, comprehensive ADR features and much more. Compatibility with other software programs is another consideration, as the user may need to import and export MIDI, Audio and Video files with extensions such as OMF, AAF and MXF.

As loudness standards gain traction in Europe and the UK, there are also a number of loudness metering and measurement tools that are integrated into the software platform to ensure that the content adheres to the latest regional loudness standards.

PLUG-INS

Digital plug-in technology has eliminated the need for expensive, bulky outboard gear and cumbersome patchbays. The number of plug-ins that can be used in a session depends largely on the amount of processing power available from the system. Certain interfaces provide on-board DSP and flexible audio routing which takes the strain from the host processor, as plug-in processing is handled by an external piece of hardware.

As discussed earlier, many DAWs come with a host of free plug-ins. However, third-party plug-in support can be another important factor in choosing a platform. If a sought-after plug-in is only available in a particular flavour (AU, VST, RTAS, TDM, AAX, etc), this can, in some cases, sway the decision between one DAW and another.

Expert Witness

Simon Haycock and John Johnson handle Technical Sales Support for HHB Communications and Scrub, its Soho-based subsidiary specialising in serving the post-production industry. Founded in 1976 and located in London, HHB Communications is a global leader in the supply of professional audio technology. Serving in the broadcast, recording and media production sectors, HHB's expertise is also recognised by major manufacturers and innovators, many of which have appointed the company as exclusive distributors of their products. Scrub is a specialist division serving the needs of the TV and film post production industry from premises in the heart of London's Soho. Scrub's demo facilities offer clients the opportunity to experience hands-on demonstrations of the latest Pro Tools systems, ICON and Euphonix consoles, as well as Yamaha and Steinberg's Nuage system.
www.hhb.co.uk

Digital Audio Workstations

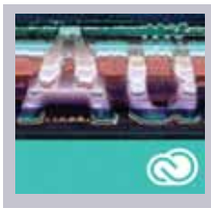
The Digital Audio Workstation is absolutely the core tool in most studios. While a few dominate, choices are still plentiful and evolving focus and features mean that there is always room to reassess your requirements. Don't be afraid to take a look around, says **Jake Young**.

Live 9 is the new version of Ableton's music creation software. The latest incarnation of Live features a multitude of improvements. In Live 9's Session View, automation can now be recorded in real time directly within clips; in its redesigned browser, all instruments, effects, samples, and plug-ins are in view. Live 9 also comes with a large selection of production-ready sounds, providing a full range of synthesisers, drum kits and one-shot samples, acoustic instruments and loops. The studio effects have all been reworked for better sound and usability, and there are new tools and an improved workflow – transpose, reverse, and stretch MIDI notes, or warp clip automation, and add curves to automation envelopes.
www.ableton.com

Soundscape V6 specialises in audio-only recording, editing, and mixing; it does not have MIDI sequencing or offer Virtual Instruments for creative composition; instead it offers the capacity to support a wide range of approaches to workflow. The V6 DAW software is intrinsically tied to the presence of an SSL MX4 PCIe card (or its predecessor the Mixpander); the DAW utilises the DSP power and extremely low latencies (four samples) of the card and its high channel count fibre optic MADI I/O connectivity. The system employs SSL's Soundscape Hybrid Core Audio and Processing engine which uses a combination of the MX4 DSP and the host computer CPU/RAM resources with drivers that are designed from the ground up to gain optimum performance from latest generation multi-core PC processors and Windows 7 operating systems (32-bit or 64-bit).
www.solid-state-logic.com

Apple Logic Pro 9 features Amp Designer and Pedalboard plug-ins that provide realistic virtual guitar amps and stompbox effects to create custom guitar rigs. Amp Designer recreates 25 vintage and modern amp heads with matching controls and 25 paired speaker cabinets that emulate the sound and feel of a guitar running through a real tube amplifier. Pedalboard adds an assortment of 30 guitar stompbox pedals that can be arranged in any order to produce a wide variety of creative effects. Flex Time is a collection of tools that enable musicians to quickly manipulate the timing and tempo of recorded audio, including vocals and instruments, to create tighter performances. Using the Flex Tool, individual beats in a waveform can be moved, without the need for slicing and editing.
www.apple.com

MAGIX Sequoia 12 is aimed at radio broadcasting, audio post production, and mastering. The newest generation of the Sequoia DAW offers improvements to its multisync editing, loudness metering according to EBU R128, enhanced spectral cleaning, and new developments to its source/destination editing.
www.pro.magix.com



Adobe Audition is now part of the Adobe Creative Cloud line-up, a new approach to managing your Adobe applications, documents, and licenses. New features include Sound Remover, a spectral repair tool, a preview editor, round trip editing with Premiere, automatic speech alignment, ITU loudness metering, and a set of new multitrack editing tools.
www.adobe.com

ACID Pro combines full multitrack recording and mixing, MIDI sequencing, and Sony Creative Software's ACID looping functionality for a music-creation and post-production environment. The latest version 7 software has an expanded set of features but retains all the classic ACID Pro features including real-time pitch/tempo transposition during playback and preview, unlimited tracks, and Sony Creative Software's signature pick/paint/play interface. ACID Pro 7 software also includes more than 3,000 Sony Sound Series loops and 90 virtual instruments. Experience MIDI sequencing in ACID Pro 7 software with real-time MIDI processing and precise control over MIDI events. Use track envelopes to automate and modify modulation, expression, or other types of MIDI controller data. Simultaneously record MIDI on multiple tracks, apply real-time quantisation, perform filtering and processing, and create and edit drum patterns. ACID Pro 7 includes software for professional music production and editing, including ACID Pro Effects Rack, powered by iZotope, Garritan Aria for ACID Pro Player, Sonoma Wire Works KitCore, and Native Instruments Guitar Combos.
www.sonycreativesoftware.com

Cockos Reaper 4 adds a number of useful new features, ease of use improvements, and customisability. You can tweak, correct, and mangle audio with pitch envelopes, which can be applied to individual media items, and create fully automated surround mixes with multichannel track metering and the ReaSurround plug-in. Users can apply rotations, transformations, and diffusions, and automate the positions of the speakers themselves. Batch rendering wildcards provide sound designers with flexibility when generating sound files in bulk, and you can manage project media and FX with the Project Bay, where you can collect, organise, and edit a list of resources that you are using, or might use, for different types of projects.
www.reaper.fm

Pyramix 8.1 is the latest iteration of Merging Technologies' flagship DAW. The full implementation of the Horus Networked Audio Converter allows a host of new recording features and an unprecedented choice of recording formats. Four application-specific packs with relevant inclusive options are delivered in Native and MassCore versions. The MassCore low-latency mixing engine is capable of handling up to 384 channels of PCM audio and plug-ins with a 256 mix bus structure. 8.1 introduces features such as Multiple Multitrack Background Recorders, Editing, Mixing, Mastering, and Publishing while Recording at any resolution of any of the Recorders, Recording Pre-buffering, ISRC support in BWF files and Take Logger to document/comment on recordings while they happen.
www.merging.com

Avid Pro Tools 11 enables audio professionals to take on productions with new audio and video engines, 64-bit architecture, expanded metering, and direct HD video workflows. The newly designed architecture powers productions with more plug-in processing, the ability to run more virtual instruments, and a host of new features.
www.avid.com

PreSonus Studio One Professional 2.5 is packed with professional editing features, including integrated Melodyne pitch correction. You can load and save audio clips, MIDI files, effects, and VIs by drag-and-drop, and import and export MP3s. Take advantage of multitrack comping, multitrack MIDI editing, and transient detection and editing with groove extraction. Import videos and create soundtracks. Use 32 bundled Native Effects plug-ins, third-party VST and AU plug-ins, and ReWire. Mix, master, burn CDs and DVDs, upload to the web, and market and sell music via Nimbit. PreSonus Exchange technology enables users to share web-based resources.
www.presonus.com

The SADiE 6 software allows a choice between proprietary audio I/O and DSP processing, or standard soundcard I/O and DSP functions running on the host computer. Sound Suite is the flagship product of the SADiE 6 range and incorporates support for all features and plug-ins. The other SADiE 6 products are essentially cut-down versions of Sound Suite with features deemed unnecessary in their target market removed. In addition to the base SADiE system there is a separate application called Multi-track Recorder (MTR), which is a streamlined dedicated recording package specially suited for live recording with high track counts. This is included as standard on the SADIE 6 LiVE LRX2, PCM-H64, and PCM-H128 multitrack systems. There are two iZotope plug-in packs. Which plug-ins are included depends on the SADiE package. The Radio Producer, Mastering Suite, Post Suite, and Sound Suite editions include the full iZotope for SADiE bundle. SADiE 6 Lite and SADiE 6 Professional both include the iZotope Lite bundle.
www.sadie.com

Steinberg Cubase 7 involves more musical features than before, with more control over dynamics and routing. Composing tools now include the dedicated Chord Track and Chord Assistance for complex harmony modulations, while the enhanced VariAudio edits polyphonic parts and builds harmonies from monophonic voices. This is rounded out by a large collection of sounds and loops plus additional features.
www.steinberg.net

Tracktion 4 (T4) is the latest version of Traktion Software Corporation's DAW platform. The software program features a single-screen user interface and drag-and-drop functionality. T4 features the same operational characteristics as the original program but with an entirely new audio engine. This progression is intended not only to make T4 compatible with all the latest operating systems, plug-in and controller technology, but also to create a modern platform for further development. T4 provides support for OSX Mountain Lion. It also provides support for Microsoft's Windows 7 and 8. Apple Audio Unit (AU) and the latest generation audio codec from Microsoft, Windows Media Audio (WMA), is also supported. Windows Audio Session API (WASAPI) is included for optimised audio data management between applications. There is also support for 64-bit Mac and PC operating systems.
www.tracktion.com

Steinberg Nuendo 6 features a native mixing console, and an ADR taker solution alongside fully integrated EBU-compliant loudness metering. Its sixth edition includes the Anymix Pro plug-in for upmixing and surround panning as well as Voxengo's CurveEQ. Add to this integration with the Nuage system and a top-end tactile control surface with I/O interfaces.
www.steinberg.net

Sound Forge Pro 10 software provides audio editors and producers with complete control over all aspects of audio editing and mastering. Whether in the studio or field, it's an all-in-one production suite for professional audio recording and mastering, sound design, audio restoration, and Red Book CD creation. Features in Sound Forge Pro 10 include precise event-based editing, integrated disc-at-once CD burning, musical instrument file editing and processing, audio conversion and time stretching, pitch shift plug-in, plus the Mastering Effects Bundle 2 powered by iZotope, a collection of six professional audio plug-ins. Sound Forge Pro 10 software supports full resolution 24-bit and 32-bit/64-bit float 192kHz files. Additionally, Sound Forge Pro 10 software includes iZotope MBIT+ Dither (bit-depth conversion) and 64-Bit SRC (sample rate conversion). Record straight into your sound card or use the Record Timer to begin and end a session at a specific time and date. Alternatively, you can start recording when a certain audio threshold is reached with Threshold Record Triggering. You can also record and edit multichannel audio files as easily as stereo files.
www.sonycreativesoftware.com

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ROCKNET
Digital Audio Network

ACROBAT
Digital Wireless Intercom

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PERFORMER
Digital Partyline Intercom

PURE
Heavy Duty Fiber Cable

www.riedel.net

Interfaces

Turning analogue to digital and back again is still not a straightforward proposition, but even if it were, the array of DAW I/O options would still be wide – from straightforward D-A and A-D to plug-in hosting, routing, mixing, monitoring, and more – all these interfaces have their own reason for being...

Avid HD I/O is a Pro Tools HD Series audio interface that's designed to completely integrate with Pro Tools HD systems. The interface features premium A-D and D-A conversion and advanced circuitry, giving pristine sound quality and clarity, and the lowest possible latency. With three configurations to choose from and a modular design, the interface can be expanded and customised for connection needs.

www.avid.com

The Lyra family of Prism Sound audio interfaces is based on the Orpheus audio path and clock circuitry, but in a smaller package for those who don't need eight channels of analogue I/O. There are two models, Lyra 1 and Lyra 2. Lyra is based on the new ARM Cortex-based processor design which offers class-compliant USB and Ethernet AVB interfacing, plus DSP and local mixing capacity beyond that of the present Orpheus platform.
www.prismsound.com

Apogee Symphony I/O is a modular multichannel audio interface featuring premium A-D/D-A conversion and microphone preamps. It is designed to deliver professional sound quality for audio recording, mixing, and mastering on a Mac. Symphony I/O offers two module slots and the capacity for up to 32 inputs and outputs of A-D and D-A conversion per unit.
www.apogeedigital.com

DiGiGrid's IOS is a Waves server including a multitude of audio and control connections. With eight broadcast grade preamp design and 192kHz precision ADC conversion, together with MIDI, S/PDIF, AES/EBU, and eight line out, IOS is able to connect artist and studio I/O via ASIO or Core audio drivers to DAW systems. IOS opens ultra-low latency Waves plug-ins on almost all DAWs via ASIO or Core audio drivers.
www.digigrid.net

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www.shure.co.uk

Antelope Audio's Eclipse 384 is a mastering A-D/D-A converter, master clock and monitoring controller. The device comprises 384kHz A-D and D-A converters clocked by two independent 64-bit DSP clocks. The fully integrated monitor controller employs 0.05dB accurate gold-plated relay attenuators and provides speaker switching, bass management, and cue mix functions with integrated talkback. The Eclipse also includes two dedicated headphone amplifiers and a custom USB interface, as well as two large peak meters on the front panel.
www.antelopeaudio.com

The Merging Technologies Horus Networked Audio Converter combines the best available A-D and D-A conversion with a transparent mic pre architecture that allows recording in up to 48 channels DSD up to 11.2MHz (Quad-DSD) or 384kHz DXD PCM. Ravenna networking allows remote control of the unit plus 176 channels of audio (at 1Fs) in and out, in addition to the standard MADI and AES/EBU I/O. Modular converter cards allow configuration for any use with full remote control from a web browser.
www.merging.com

The M-Audio ProFire 2626 FireWire audio interface delivers 26 x 26 simultaneous I/O, complete with an on-board DSP mixer sourced from up to 52 audio streams. It includes Octane preamp technology on all eight analogue inputs, ADAT, S/PDIF, word clock and MIDI. JetPLL jitter-elimination technology ensures pristine audio quality and reliable synchronisation all the way up to high-definition 24-bit/192kHz resolution. In addition, ProFire 2626 offers easy FireWire connectivity, extremely low latency, dual headphone outputs, front-panel quarter-inch instrument inputs, and standalone operation.
www.m-audio.com

The Focusrite RedNet 5 – 32 I/O HD Bridge adds RedNet to the Pro Tools HD system. Up to six units can be connected to one Pro Tools HDX system, supporting up to 192 channels at 96kHz or 96 channels at 192kHz. Pro Tools HD Native and Pro Tools HD (TDM) are also supported. RedNet 5 is interoperable with other Pro Tools interfaces and no RedNet PCIe card is required.
www.focusrite.com

PreSonus' FireStudio Project FireWire recording system features two mic/instrument inputs, each with balanced insert-effects send/return, plus six mic/line inputs, all with XMAX Class A solid-state preamps, plus S/PDIF and MIDI I/O. Its 24-bit, 96kHz converters and JetPLL jitter-elimination technology deliver professional-quality audio. The FireStudio Project is bundled with PreSonus' Studio One Artist DAW software for Mac and Windows.
www.presonus.com

"Shure has made these Ribbons to withstand the harsh conditions of the road. We gave these mics no special treatment when it came to handling. These KSM 313's are tough. The bi- directional characteristics of ribbons are also something live engineers might be wary of. For the loud stages I have used the KSM 313's on, this has not been a problem. With just minimal testing, the microphones just came alive. Please note we were working with Slash's already perfect and classic sounding guitar tone. The Ribbons just sounded so natural with great fullness and transparency."

Kevin "Tater" McCarthy, Monitor Engineer, Slash and Judas Priest

"The KSM313 gives a much fatter, warmer, rounder and rich sound. I have just 2 of them, one on Slash's dirty sound, and one on his clean. I found I got a great sound with them with very little effort or EQ'ing – for example, previously on Judas Priest, to achieve that huge guitar sound I needed to use 3 Shure mics on each guitar, usually an SM57, a KSM27 and a KSM32, but with Slash I used just the 313..."

Martin Walker, Production Manager & FOH Sound for Slash

The Fireface UCX for studio and live recordings packs into a half-rack size unit what usually would be spread out over two or three 19in panels. The UCX provides 36 channels of audio – 18 I/Os, and the optional Class Compliant mode turns the UCX into a professional audio interface for Apple's iPad.
www.rme-audio.de

Sound Devices' two-channel USBPre 2 offers professionals a portable interface to interconnect audio sources to both Mac OS and Windows computers over USB, with no additional power source required. It is ideal for voiceover recording, reference playback and monitoring, and test and measurement. USBPre 2 uses the same extended-bandwidth, low-noise microphone preamplifiers and digital converters as Sound Devices 7-Series digital recorders. The class-compliant, plug-and-play device accepts mic level, line level, consumer line level and SPDIF digital (coaxial or TOSLINK) inputs. Its microphone preamplifiers have selectable analogue limiters, high-pass filters, 48V phantom power and high-resolution LED meters.
www.sounddevices.com

Apollo 16 is Universal Audio's flagship 24-bit/192kHz audio interface, delivering conversion with 16 x 16 analogue I/O – twice the analogue connectivity of the original Apollo model. This FireWire/Thunderbolt-ready interface comes with onboard UAD-2 QUAD processing. Audio can be tracked in real time through classic UAD analogue emulation plug-ins – on both Mac and Windows 7.
www.uaudio.com

TC Electronic's Studio Konnekt 48 meets the need for professional recording, mixing and monitoring. The I/O section features four IMPACT II preamps, two independent phones out, double ADAT 96kHz SMUX, TOS, S/PDIF and Word Clock. Studio Konnekt 48 also comes with DSP effects, including mastering tools based on System 6000 algorithms and a reverb based on TC's Reverb 4000 technology.
www.tcelectronic.com

NTP Technology's DAD AX32 2U A-D and D-A audio converter and digital I/O interface features superb sonic quality and versatile I/O structure with interface for AES3, MADI, Pro Tools HDX, and audio via IP Layer 3 powered by Dante. Up to 32 Line or ultra-low-noise and transparent microphone preamplifier channels can be configured. All analogue and digital I/O can be routed in the unit in any combination on a mono channel basis.
www.ntp.dk

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*Apollo and Apollo 16 interfaces are Mac/Win7 compatible; Thunderbolt Option card is Mac-only. Individual UAD Powered Plug-Ins sold separately.
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Steinberg Wavelab 8

EDITING & MASTERING DAW

Wavelab has carved its own niche in the DAW market with a focused approached to its purpose and feature-set. **Alistair McGhee** dives into the latest enhancements that come with the long-anticipated version 8.

The loudness war is over – or so they say. Dynamic range is back in town and sophisticated measures of loudness are the order of the day, no more Mr Loud Guy. Steinberg's gift? Wavelab 8 – with shiny new loudness metering, speaker management, and a bucket of plug-ins. How time flies – it really is well over two years since version 7 brought the 'Lab to OSX...

LOUDNESS

There are several subjects guaranteed to wind up your average couple on the sofa and one is certainly the loudness of adverts compared to normal programme material. So annoying is it that in 2010 the EBU published the R128 Loudness Recommendation with a view to restoring calm to couches everywhere. Wavelab 8 implements the EBU recommendations and enables an exacting and comprehensive approach to loudness control. Within the standard Wavelab edit workspace you have several display options with the dockable meter probably the best starting point. The meter displays eight different aspects of loudness from momentary loudness (aggregated over 400 milliseconds) through short-term loudness (3-second chunks) to integrated or overall loudness of the programme material so far. You also get a display of your 'target loudness' and the dynamic range of each of the three loudness measures. And with the ability to view loudness on a file-by-file basis in non-real-time, checking the compliance to these standards is a straight-forward business. With loudness normalising available in both the edit workspace and the batch processor this is a real boon to radio stations with audio material from multiple sources all at different levels. Load them *en masse* into the batch processor, define your loudness standard, then hit start and boil the kettle.

SPEAKER SETUPS

Another new feature of version 8 is the ability to define up to eight different monitoring setups that are available only a mouse click away in the master section. Each preset can be stored including its own setting for the volume control. For multi-monitor setups in mastering rooms this is a real boon, making it easy to feed different speaker arrangements for painless comparisons of your master. Each set up has eight defineable outputs, making it capable of anything from mono to 7.1 surround.

For me it's great to set up a channel swap setting and it's also easy to use this feature as a custom 'dim' key, but actually an on-screen 'dim' key would be great too. If I can be allowed a little user interface niggle, I like a double click to set a pot to 'zero'. I'm not against Ctrl-clicking, I just prefer a double click.

SUPERCLIPS AND SUBMONTAGES

One of the major new features in version 8 is the ability to nest montages and 'freeze' clips with their effects into cached files so saving CPU horse power. In any montage you can select a bunch of clips and designate them a 'Superclip'. This Superclip is rendered and can be inserted in any montage (excluding itself of course). However if you later decide to change the effects applied to your Superclip or re-edit it in any way then you can simply call up the sub-montage, make your changes and then save them. Saving the montage renders the superclip and automatically refreshes the Superclip in any montage in which it is being used. Neat eh?

Superclips can be internal to your project in which case they are described as I sub-montages or they can be external or X sub-montages. These X-rated superclips can then be shared with other projects. You can nest sub-montages to any level to build up your finished product. If you are absolutely confident of your superclip then it can be frozen and rendered once and for all to produce a standard audio clip. The freezing process means the clip cannot then be edited as a montage. The Montage workspace supports montages from stereo up to 5.1 surround. You choose the channel format when creating the montage, and when working in a surround format the audio clips can be routed to the surround outputs using the surround panner.

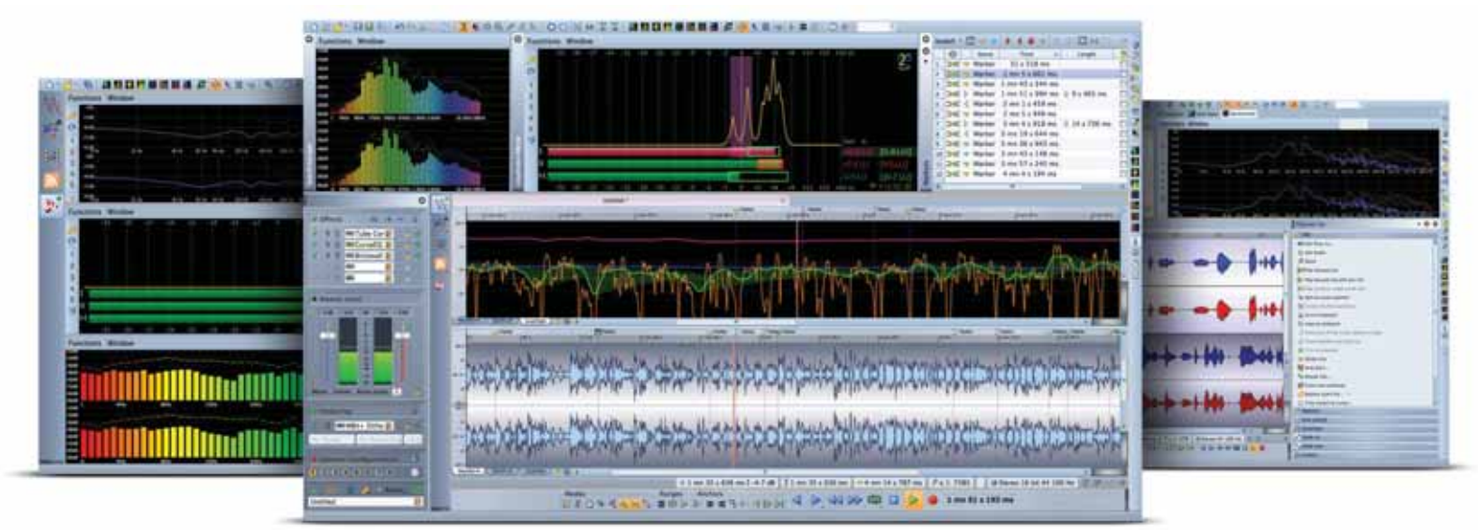
The issue of surround is a slightly thorny one. In the Montage workspace you can work with as many tracks as you like and if you create a

INFORMATION

Feature set

- Over 150 improvements compared with version 7
- Advanced EBU-compliant loudness metering and processing
- Master Transport Panel for quick and easy project navigation
- Extended Audio Montage environment featuring the SuperClip concept, a master plug-in section and support for files of different sample rates

www.steinberg.net



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surround montage you can route the tracks to your various channels. However what you haven't got is direct support for surround tracks and this is something you currently just have to work round. You can open a 5.1 surround file into a 5.1 surround Montage but the audio tracks are not synced together as they would be if you loaded a stereo clip into a stereo track.

PLUG-INS

Every incarnation of every DAW and editor needs to field some plug-ins to be taken seriously. The tricky bit is striking the balance between quantity and quality. In version 8 the new additions to Wavelab weigh in on the quality side of the scales. Advanced dithering and bit reduction is provided by Izotope's MBIT+, a chunk of the Izotope Ozone 5 package. Izotope's products come with a substantial reputation and the inclusion of its dithering algorithms is a nice bonus. Also bought in for version 8 is Voxengo's CurveEq – a smooth-sounding EQ with a tidy feature set. The Curve's party trick is the ability to copy and paste EQ curves from one piece of audio to another. To get the spectrum matching trick off pat you will need to be willing to spend some thinking time in the interface as there are quite a few options in there. However you can just click and add points to a curve or even just draw one freestyle if a more direct approach appeals.

CurveEQ made an appearance in Cubase 7 as did the Tube Compressor and Brick Wall Limiter which also make the short trip over to Wavelab. As you might expect the Tube Compressor is warm and comforting while the Brick Wall takes no prisoners. Both of these are welcome additions to the Wavelab audio armoury but with your new found loudness metering you'll want to be using these bad boys sparingly.

AND THE REST

Steinberg claims over 150 improvements compared with version 7, and some of the handiest are in the edit functionality. The gain of a selected section can be raised with one click, volume handles offering easy editing of subsequent gain changes. Trim to selection makes it a snap to discard unwanted audio outside the selected audio area while you can also apply a sequence of plug-ins to the selected area with just one mouse click well after having defined your plug-in chain in the first place.

Version 8 also offers a comprehensive metadata editing environment, including a template approach where you can set up a metadata preset for your recordings. With support for a raft of formats including CART and BWAV, Wavelab 8 offers a professional-grade metadata solution.

THE WRAP

Having spent much of my life in multitrack DAW world I've always admired Wavelab, without being a signed-up member of the fan club. Despite a very productive time working on material from Tony Christie, Paul Carrack and Alabama3 in Wavelab in my younger days, I tended to hang out more in SADiE, Sequoia and Pyramix world. But things change; back then I was a big user of Word, now I'm a WriteMonkey monkey – simple yet powerful distraction-free text editing – it's all about the content. And that, I think, is the attraction of Wavelab, yes it has a blizzard of options and powerful tools, but increasingly it's the focus it brings to the content that I find more and more compelling. Wavelab 8 is all about the sound, and that is just fine by me.

THE REVIEWER
ALISTAIR McGHEE began audio life in Hi-Fi before joining the BBC as an Audio Engineer. After 10 years in radio and TV, he moved to production. When BBC Choice started, he pioneered personal digital production in television. Most recently, Alistair was Assistant Editor, BBC Radio Wales and has been helping the UN with broadcast operations in Juba.

A Ribbon Revolution
...the rules have changed

Steve Levine

There's a revolution underway in recording studios and on live stages stretching far and wide across the UK and beyond.

Renowned producer and Chairman of the Music Producer's Guild, **Steve Levine** has added his voice to a chorus of unswerving praise aimed directly at Audio-Technica's revolutionary **AT4080** and **AT4081** Ribbon Microphones:

*"Using the **AT4080** for vocals, it sounds instantly like a late 50's, early 60's session, but without the noise. It has that thick warm vocal sound reminiscent of so many great vocals of the era...*

*...The **AT4081** is now my first call when recording guitar amps... they sound so sweet..."*

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Slate Pro Audio Raven MTX

■■■ MULTITOUCH AUDIO PRODUCTION SYSTEM

Others have tried touch-mixing, but none have created the buzz that the Raven has. Is it justified? **Mike Aiton** gets his mitts on-screen.

THIS has been one of the hardest reviews I have ever had to write – where to start? I have reviewed (and predominantly bought with my own hard-earned cash) many awesome pro-audio products, but none has left me with such a complete sense of "this is where it is at, this is where it is going and I want one NOW!"

The Slate Pro Audio Raven MTX is by far the most unique and paradigm-shifting product I have ever tried. The Raven puts the fun back in pro audio and makes me want to reach out and touch, mix and consequently enjoy my work so much more. I think this product does for audio what the iPad has done for the internet. It has rekindled (excuse the 'tablety pun' here) my audio creativity. So what is it about the Slate Raven that has got me all frothy? Read on...

The Raven MTX is a 46in state-of-the-art, touch-sensitive high-definition LCD screen-based multitouch, user-customisable, virtual 32-fader sound mixer, with built in monitor controller (stereo or surround) and a thoroughly useful iPod dock. There is also a Raven MTI (27in) version with no monitor controller available.

It is ergonomically ideally shaped, so that everything is reachable from the sweet spot (your chiropractor will hate you for this as he cancels his holiday in Tobago). Apparently the Raven has even been designed with acoustics in mind – for minimal reflections to avoid that comb filtering of the lower mids that other desk designs can suffer from. So it feels good and sounds even better.

The Raven generates virtually no radiated heat (due to cold LED backlighting) and therefore has no noisy cooling fans. The 1920 x 1080 HD display (2K) will be easily upgradeable to 4K and higher resolutions when they become more widely available (bring on the new Mac Pro and 4K gfx outputs!). The bespoke touchscreen technology is not based upon capacitance or resistance but on a grid of infrared beams, which can detect 12 simultaneous touch points. The 5ms response time to touch and Nano-glide surface gives a truly smooth and instantaneous high-resolution feel. There is no detectable parallax error (once calibrated) and the viewing angle is huge, giving a sharp and bright but not fatiguing display.

The Raven runs on Mac OSX Lion or Mountain Lion and ideally on 2.4Ghz i7 (or Xeon) processor and upwards with a 1GB gfx memory (so post-2010 Mac Pros are ideal – although MacBook Pros and iMacs of a similar spec should be fine).

To connect the Raven to the Mac, it's a DVI and a USB cable. Next, run the Raven installer that installs the software driver and calibration software. After restarting, run the screen calibration software to ensure best results.

To connect the Raven to Pro Tools, launch NeyFi (the clever control software licensed from Paul Neyrinck that is used in Neyrinck's V-Control). This allows OSX and Pro Tools to become multitouch, via the Raven software layer. Next, launch Pro Tools and go to the Setup > Peripherals menu and follow a few instructions (similar to setting up a Pro Control or a MIDI controller). This setting is retained by Pro Tools for all sessions. Once set, after opening any Pro Tools session the Raven software will sync with your current session. Welcome to the world of touch audio! Once you have tried this you will be smitten. Incidentally, the OSX desktop is now a total touch experience (although not multitouch like the Raven). Imagine the fun you could have with applications like Video Editing or Photoshop…

The Raven is available as a 7.1 surround or stereo version. The surround upgrade can be retrofitted by the user and just requires sliding in the Surround Module to the main chassis. The monitoring section of the Raven is a 100 percent

THE REVIEWER
MIKE AITON
was weaned at the BBC. But after breaking free nearly 25 years ago & becoming one of London's busiest freelance dubbing mixers, he can mostly be found in his Twickenham dubbing suite, mikerophonics. In his spare time he takes therapy for his poor jazz guitar playing and his addiction to skiing and Nikon lenses.

digitally controlled analogue circuit of pristine quality. The sound is clean, clear, and articulate, and measurably exceeds most (if not all) external monitor controllers. Steven Slate is reassuringly very discerning about audio quality.

The analogue monitor controller section is mounted in two of the four integrated rack spaces at the rear of the desk. Other modules include the Raven Aux I/O Module (includes power, meter bridge, iDock, DAC inputs, and talkback mic connections). For stereo operation the Stereo Module has main inputs (from Pro Tools I/O on DB25), stereo speaker outputs on DB25, and cue outputs on DB25. For surround operation, the stereo 8-way main input becomes surround input 1, and on the surround module there is a DB25 connector for surround source 2. The surround speaker outputs are on a further DB25 connector. It should be noted that the Raven has been cleverly configured so that switching between stereo and surround and using the same LR speakers does not require re-patching at all.

The left control module on the Raven is for headphone selection, cue and studio selection, stereo and surround speaker selection and mute, and lighting, metering, and talkback controls. The monitoring section appears to have been very cleverly thought out and, for something so powerful, it is relatively straightforward to use. A momentary press on a speaker output will mute the speaker, whereas a two-second hold will solo it. And colour-coding has been employed to indicate modes and sources for this and on the meter bridge.

There is a built-in talkback mic in the meter bridge, two up-facing headphone sockets far left on the underside of the front of the desk in the iDock section with a good array of sources to choose from, plus iDock and mini jack connections.

"The monitoring section of the Raven is a 100 percent digitally controlled analogue circuit of pristine quality."
Mike Aiton

The right control module on the Raven is for stereo speaker selection, source inputs, and talkback selection.

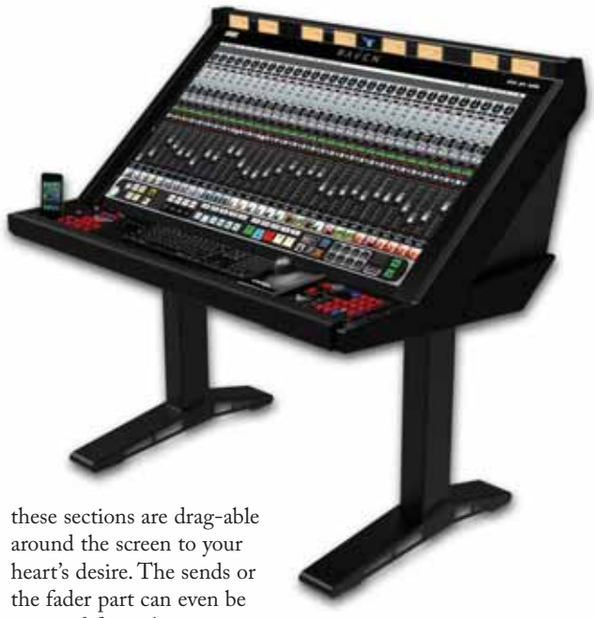
In stereo mode, the monitor section has three speaker output pairs: A, B, and C, and an additional built-in laptop reference speaker set in the meter bridge. Speaker C output can optionally act as a subwoofer and be paired with Speaker A, B, or both. Multi-Source Mode in stereo is as easy as simultaneously pressing the inputs you wish to monitor at the same time.

The Raven cue system is easy to understand too. There are eight cues: Cue 1 is always fed from Mix1 (typically the DAW main stereo outputs). Cue 2 is switchable between four stereo sources: Mix 2, iDock, Digi or Aux. Cues 5-8 are four mono cue outputs.

TOUCHSCREEN MIXING

The Raven Mixer exists as a 'third screen' for Pro Tools. You can touch your Pro Tools mixer on-screen, but only one fader at a time; the Raven Mixer has 32 on-screen faders (with no motors to wear out, or rubber bands to break, or coffee cups to spill when the automation kicks in) together with automation mode selectors, send and pans, mutes, solos, track arming, and plug-ins – all the usual desk culprits we are familiar with.

One of the best things about the Raven is that the mixer is highly customisable. The faders, plugs and mutes etc are in a different part of the mixer to the sends and



these sections are drag-able around the screen to your heart's desire. The sends or the fader part can even be removed from the screen to allow the Pro Tools edit window to poke through. One function needed in post is the ability to see the edit window as a preview screen, but still have the faders visible for mixing. This software enhancement has already been implemented for release.

The Raven Mixer has customisable tool bars that contain the fader banking, transport controls, screen switching, editing modes and functions. All these are drag-able and arrange-able to your heart's content in storable banks. There is an unlimited array of macro keys that can be stored, really making Pro Tools sessions even more productive.

The Raven Mixer allows the use of pictures to aid as channel identifiers. These will be initially a preset collection (somewhat music biased) but will in future, I believe, be user importable (which would be great for post!).

One thing I did find odd was that I expected to be able to swipe across the faders with three fingers to scroll the banks of tracks, but I was disappointed. I believe Steven and Alex at Slate have this already in the works.

Hardware aficionados need not feel left out here. When you use the 'plugbot' to open plug-ins from the Raven Mixer, the plug-in opens at virtually 19in rack size allowing you to touch the controls as if they were in a rack. Although most plug-ins are not programmed for multitouch yet, I did not find this a train smash at all, as often with plugs, one is adjusting one parameter at a time. I can see multitouch really taking off here though…

When using the Pro Tools surround panner, it will auto follow the selected channel, which is a feature sadly lacking in Pro Tools itself.

INTRODUCING THE NAV PAD

In the tool bar is the mini Nav Pad, and there is a floating semi-transparent larger version. This allows two-finger swipes for waveform zooming, track scrolling, track banking and most importantly scrub and shuttle of audio. This is where you can reach out and touch your audio in the edit page. You can drag fades, swipe to make selections, and so on.

I invited Supervising Sound Editor/Mixer Mike Wabro to get his expert feedback. "Touching audio is surprisingly fun and inspiring. Yes, you really can fine edit dialogue! Like any new technique or interface, there is a slight learning curve which is to be expected, but it is surprisingly quick to adopt."

VERDICT

I think the Slate Pro Audio Raven is a revolutionary product. Originally conceived in a music context, its application has been rapidly maturing into post production too. It is comfortable, customisable, software driven, a complete joy to use, and very affordable.

Inventors Steven Slate and Alex Oana at Slate Pro Audio are justifiably very excited about this product. Just think how great the future is for 'soft desks', the sky is the limit with future features – it's just code. This desk is planned to work in future with all major software DAWs and seems therefore to be a great investment.

Slate is very responsive to user feedback and I have enjoyed meeting such positive and proactive people. I couldn't believe how much I enjoyed the whole interaction with this virtual console and the reignition I felt in my creativity. Doubters really need to sit down and try it. With the new features in Pro Tools 11 and the Slate Raven, we are entering a fantastic new era in pro audio and it is very exciting as a mixer to be part of it. A total must. This is going to be huge!
www.slateproaudio.com

INFORMATION

Pricing
- Slate Pro Audio RAVEN MTX 46in Stereo Console £11,125 +VAT
- Slate Pro Audio RAVEN MTX 46in Surround Console £12,075 +VAT
- Slate Pro Audio RAVEN MTi 27in Console £1,999 +VAT

Available from
MediaPros
+44 (0)20 8400 9400
sales@mediapros.co.uk

www.mediapros.co.uk

iZotope Trash 2

■■■ MULTIBAND DISTORTION PLUG-IN

Can distortion become an art form? iZotope certainly thinks so. Trash 2 is the master of mashing, and **Simon Allen** is at the controls.

DISTORTION sounds are a very personal and characteristic element of any professional's sound, whether it be full-on mayhem or simple harmonic enhancement. Trash 2 promises to push further past the obvious guitar and bass applications into providing a toolbox of distortion for almost anything. Now in 32- and 64-bit versions for AU, VST, VST3, RTAS, AAX (Pro Tools 10), AudioSuite and DirectX, Trash 2 is ready to smash any DAW around today.

OVERVIEW

The first thing any previous Trash user will notice is the improved, more intuitive GUI, which brings it in-line with things like Alloy 2 or Ozone 5. This brings it right up to date with a fresh feel.

As before, there are six different modules but the labelling has been updated: the showpiece Trash with two Filter modules for EQ purposes pre and post the Trash module, a newly designed Convolve module, Delay, and Dynamics. Of course, as with Alloy 2, you can also rearrange the order of the modules in your signal chain for further control or surprises. There are also a large in and out stereo faders and a signal display at all times, with a limiter built-in on the output always to hand. This is particularly useful to protect your hearing when experimenting with crazy distortion effects.

The most significant module of course is the Trash module, which provides two 'Stages' of distortion algorithms, each with a post filter to help control harmonics, and each stage can be run in either single band mode or up to four user-definable frequency bands. For each band, on both stages, there are around 60 different pre-made distortion algorithms or waveshapes ranging from simple harmonic enhancement to full on carnage. You can build your own waveshapes or edit a pre-made one to create your own personal sound making this plug-in able to deliver infinite possibilities. There is even now the opportunity to completely rectify the waveform.

Two identical but independent Filter modules are positioned pre and post the Trash module by default, and you may well leave them there, but of course you can always experiment. The Filter modules are based on the same algorithms as found in Alloy 2 and Ozone 5 with six parametrics and over 20 different filter types to choose from per band, including vowel shapes. Combine all this control with the built-in modulation and you are able to create a whole new set of effects.

The Convolve module is loaded with impulse responses to place your sound inside. New for Trash 2 are IRs ranging from anything from the normal guitar cabinet to many household items. IRs can be added too, either with the Edge expansion pack, or the new option to load your own .wav or .aif impulse responses.

The Dynamic module has compression and gating from full bandwidth up to four separate bands. Each band has side-chaining and a detection filter. I really like the graphical display of gain reduction, which shows you in real time the waveform and how your settings are responding. Likewise, across other modules there is a very clear real-time frequency spectrum, which is very useful when adjusting the EQs and bandwidths for any module you run in multi-band mode.

To complete the plug-in and for creating even further crazy sounds there is an excellent 'Delay' module. Even though I'm mentioning the Delay unit last, it doesn't mean iZotope has put any less effort into this module at all. It is well equipped with everything you would expect from a decent delay unit including analogue degradation profiles and lo-fi delays.

THE TRASH EXPERIENCE

Sonically Trash 2 is really exciting and crunchy, and yet still rich and powerful. One of my favourite elements is the limiter on the final output, not just because it catches all the nasty processing you will experiment with before hurting your ears, but even on it's own I found myself driving the input to the limiter without any other module enabled to find a great digital distortion unlike driving a bus or alternative dynamics plug-in.

The multi-band mode is key to Trash 2 being able to offer such rich sounds. For example, by giving your low end a little bit of subtle grit and your high end getting some excessive saturation while your mid range is smashed into nothing but noise, you can find a distortion that is forward yet doesn't destroy everything in its path. I also loved utilising the stereo enhancement within the trash module, especially on a single band to provide another separation method in the mix.

Instantly, especially for myself coming from Alloy 2 and Ozone 5, I love the new look and anyone will find Trash 2 easy to use and navigate. There is an excellent set of presets which work very well and are easily adapted. Personally I really enjoyed the more subtle presets on those occasions you wouldn't normally choose a distortion plug-in *per se*. They just added a lovely lift to certain elements of a mix.

CONCLUSION

With so much scope for user editing and the convolution module, Trash 2 pulls away from other more guitar-based distortion effects to offer a whole lot more. It can turn uninspiring audio into something exciting, rich, and energetic. Alternatively, it can lift small details and bring that wow factor out of a busy mix. Trash 2 is a great tool with so many uses that it far outdoes any other distortion and guitar amp modelling plug-in.

THE REVIEWER
SIMON ALLEN
is a full-time sound engineer and record producer. Previously Studio Manager at High Barn Studios in Essex, he is now based at City Studios in Cyprus where he is Senior Engineer and heads up the new music studio.

INFORMATION

Feature set
- 60+ distortion algorithms
- Newly designed Convolve module
- Two redesigned Filter modules, each one featuring new vowel formant filters, screaming peaks and node modulations
- Two extensive new preset libraries: Edge and Classic Textures

www.izotope.com

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ADV726V1/E

DPA 2011C

REFERENCE STANDARD TWIN-DIAPHRAGM CARDIOID CONDENSER MICROPHONE

"The value of any mic comes down to how much you will use it and how it delivers versus what you have to pay for it. In this case, I feel the 2011C delivers across the spectrum." Rich Tozzoli

This compact, modular high-end condenser microphone is crystal clear, present, and notably non-colored, writes **Rich Tozzoli.**

DPA's 2011C is a compact cardioid microphone, part of the DPA Reference Standard series. It features the MMP-C compact preamplifier combined with the new twin-diaphragm capsule – a phantom-powered mic that's only 3.6in long and a whopping 2.3 ounces.

FEATURES

Although the 2011C is small, it employs Reference Standard preamps instead of FETs, as utilised in the 4060 miniature series. Inside, twin capsules are configured back to back at the top of the 'interference tube' – this helps create its cardioid pattern and reduces self-noise. In essence, the capsule itself sits about halfway up the body, where the 2011 number is stenciled on. When recording in X-Y, you should position it from that point, not at the tip of the tube.

The 2011C can be used both live and in the studio; it handles SPLs up to 146dB, features a 20Hz to 20kHz frequency range and is quite flat across the entire spectrum – something I clearly noticed in use.

Wisely, the 2011C's preamp can be used with any of the newer DPA 2000 and 4000 Series capsules, allowing the use of MMC2006 or MMC4006 series omni capsules.

IN USE

The first test of these mics was at drummer Ray Levier's house, where we were recording TV cues. First, we rolled a few takes with the setup we had used for almost a year, centred on a pair of high-end omni overheads, just to tune our ears. Then we swapped in the 2011C pair through the same preamplification, via Focusrite ISA 428. The difference was immediate; our mutual reaction was 'wow'.

The 2011C is crystal clear, present, and notably non-colored. What you hear is what you get; in other words, with the 2011C pair, the cymbals, toms, snare, and entire kit sounded just like they did in the room naturally, but with a sense of air and clarity both in the headphones and on playback.

Next we used a 2011C as a room mic and even put one inside the kick (literally inside the drum itself). Again, 'wow!' was the standard reaction. The kick truly surprised us in its punch and 'thwak' – normally a 2011C, or anything like it, is not my go-to kick mic. However, there is no denying what came out of the speakers and the room mic had the same type of presence, but with less punch (due to the distance to source). Since DPA had also loaned a set of d:vote 4099D clip mics, we mounted those on the toms. The entire kit had DPAs on it, the results spoke for themselves.

We also recorded Levier on vibes in this session via 2011Cs and again they delivered on clarity and presence. Since I hadn't used a 4011C in years, I can't offer readers a direct comparison. But all I can say is that I know what I hear, and it's good. Levier felt the same as I did. "After recording in my studio for quite some time I've gotten to know the room and mics sonically," he noted. "When we put up the 2011Cs and A/B'd them with what I had, all I could say when I heard them through the monitors was, 'wow!' The difference, focus and uncolored clarity was very apparent."

Over the course of the next few weeks, I used them on percussion, acoustic guitar, violin, mandolin, and even vocals. I would say the vocals were the weakest of the bunch (with the included windscreen), but that's not the intention of this mic anyway. On the acoustic instruments, it gave me exactly what I wanted: natural, clear tone. What I did notice, without exception, is that when recording with 2011Cs, I needed far less EQ to make the instruments work in the mix, where it matters. Also, the small size makes miking a breeze, and when recording myself (which I do quite a bit), the mic never got in the way.

SUMMARY

The value of any mic comes down to how much you will use it and how it delivers versus what you have to pay for it. In this case, I feel the 2011C delivers across the spectrum. In my view, it's clearly a high-end mic at a mid- to mid-high level price point. Individually, these mics will cost you about £510 street. A stereo matched pair (selected on sensitivity within +/-1.5dB) of 2011Cs with a foam lined Peli Case with two windscreens and mic holders will run to around £1,095. To get into the renowned quality of DPA at that price is undoubtedly money well spent. Add in the fact that this system is modular and, most importantly, delivers superb sound, it's a no-brainer to have in your arsenal. That's exactly why I got out my credit card and purchased a pair for myself. And wow, have they had a lot of use already!

INFORMATION

Price: £510 (approx)

www.dpamicrophones.com

THE REVIEWER

Rich Tozzoli is the Software Editor for *PAR* as well as an accomplished recording engineer, composer for television, and active musician.

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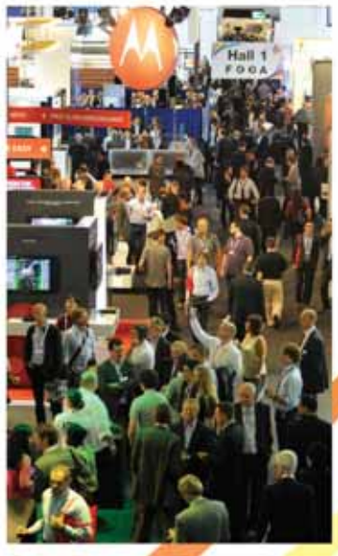

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Camera Link Technology

Getting pictures from the camera to the control room is a vital part of the broadcast production chain and technology is continuing to develop to make the process more efficient and flexible. **Kevin Hilton** looks at the current state of the art and the new formats that are beginning to emerge in the field of camera links.

BSI unit at a Chelsea Premier League football match

GLOSSARY

Camera links The means of getting video signals from the camera on location or in the studio to its control unit in the OB truck or studio gallery. This has traditionally been done using cables – at one time triaxial and now fibre optic – so that a stable, good quality connection is achieved. While cabling is still preferred in many situations it is not always convenient, particularly where longer distances or a high degree of movement are involved. Consequently, wireless is well established today. Links are typically carried over RF, with industrial band WiFi increasingly an option.

CAMERAS are often said to be only as good as their lenses. In television broadcasting that comment on their effectiveness can be extended to include the connection used to get pictures from the camera into its camera control unit (CCU), which is used to manipulate lens parameters and colour settings, and from there to the vision switcher and overall production chain.

A good camera link has to have enough bandwidth to carry full resolution video signals in as convenient form as possible. Cables were the mainstay for many years and this tried and tested technology was refined so that feeds could run over the thinnest and longest lines available while still maintaining picture stability and quality.

Until the last 10 or so years the cable type that delivered this was triaxial, more commonly known as triax. This is an electrical cable that has many similarities to coaxial, which has two conductors using the same axis. The difference is that triax has an extra layer of insulation and a second conducting casing. Triax delivers higher bandwidth than coax, along with greater resistance against interference. This, understandably, makes it more costly.

A cross-section of a triax cable would show three concentric conductors: the force or sense (voltage is applied on the force and measured on the sense), guard and common. The outer casing is most usually used as a protective earth conductor and acts as a Faraday shield against electro-magnetic interference (EMI). The force/sense gives connectivity for both power and signal; power return is carried on the inner screen.

By using frequency-division multiplexing triax cable is able to carry audio and video signals from the camera, while at the same time taking control instructions, intercom, return audio and video, tally signals (which indicate whether the camera is on air or not) and power for the camera.

In the last decade fibre optic cable – more properly known as optical fibre – began to take over from triax. This is primarily because it delivers good bandwidth over long distances, although that does come at a premium compared to the cost of triax. An optical fibre is made of glass; it is transparent, flexible and just thicker than a human hair. Today's fibre optic cable usually consists of up to 1,000 fibres, which can cope with data rates – bandwidth – in the region of terabytes a second. Another reason for the move to fibre over metal-based cable is it has less signal loss and is not affected by EMI. Although optical fibres are strong in themselves, cables still have to be handled and installed carefully to guard against breaks brought about through stress and aging.

Among the leading manufacturers of camera links that have embraced fibre is Telecast, part of the Belden group. Its main product is the CopperHead fibre optic transceiver, which is used widely in sports and ENG/SNG broadcasting, as well as digital cinematography.

An obvious drawback of cabled camera links is their restricted mobility. Wireless devices allow freedom of movement – a must in these days of fast-moving news and sports coverage – while improved processing technologies are delivering the quality and stability expected today.

Wireless cameras operate in the RF (radio frequency) spectrum but growing demand and the recent reorganisation of available bands has led many manufacturers to design equipment for specific frequencies. BSI (Broadcast Sports Inc) offers a dual stream transmitter that sends signals using FDM (Frequency Division Multiplexing) technology over 20MHz bandwidth links, running in the microwave portions of the RF spectrum, which has more bandwidth available.

A recent entrant to the field is Boxx TV, which also uses microwave spectrum for its products. Its main camera product, Meridian, runs in the licence-exempt 5GHz band and is designed for uncompressed, zero-delay short-range transmission on multi-camera studio shoots.

Boxx TV also offers a longer-range system for location work, the Zenith. This again works in the 5GHz range – specifically 5.1-5.9GHz, giving approximately 30 channels – and runs on H.264 compression. Links are carried over this industrial band WiFi, which is less crowded and more secure than the kind of connection you would get in your local coffee shop.

Two companies that have been at the forefront of wireless camera systems since the early days of the technology are Link Research and Gigawave, both now part of the Vislink group. Each produces transmitters based on MPEG2 compression, many of which were used during the London 2012 Summer Olympic Games, as well as being a key part of general sports OBs and ENG (electronic newsgathering). Like other manufacturers in this sector the Vislink companies also produce equipment that employs H.264, the Advanced Video Coding component of the current MPEG4 compression system used for carrying HD over low bit rate connections.

The next big step for RF wireless cameras will be a new compression standard, High Efficiency Video Coding (HEVC). Also known as H.265, this is currently in draft form and is being drawn up jointly by the ISO/IEC Moving Picture Experts Group (MPEG) and the ITU-T Video Coding Experts Group.

Traditional broadcast engineering systems like RF are still mainstays in TV interconnectivity but telecom technologies are beginning to make themselves felt in this field. Mobile phone technology in particular is being used in situations where SNG (satellite news gathering) vans cannot get to the location in time and when getting pictures on air is more important than broadcast standard quality.

LiveU made its first moves into broadcasting during the 2008 Beijing Olympics, since when its backpack and handheld 4GLTE/3G, HSPA+, WiMAX and WiFi cellular systems have been used to cover Hurricane Irene, the Academy Awards, the Royal Wedding, and London 2012. The systems are based on multiple SIM cards, with the signal split between them to get the best network connection.

Dutch company Mobile Viewpoint uses similar techniques. A subsidiary of internet and mobile technology developer Triple IT, Mobile Viewpoint worked with the BBC on covering the progress of the Olympic Torch around the UK last year. Signals from cameras mounted on a van driven in front of the Torch Bearers were fed to a vision mixer inside, where they were mixed and processed ready for transmission. The pictures were relayed through eight different 3G SIM cards linked together, which searched for the strongest local 3G signal.

The core of the system was the WMT (Wireless Multiplex Terminal), incorporating the SIM card array, which worked in conjunction with Continuous Picture Technology (CPT). This was developed with the BBC to produce a consistent, even video link for when the media vehicle travelled through rural areas where mobile coverage is patchy.

REFERENCES

RF Measurements of Die and Packages by Scott A Wartenberg, published by Artech House 2002.

PRODUCT**FOCUS**

Telecast
CopperHead 3400
Multiple 3 Gbps video link for 3D and dual link production
www.miranda.com/family/10

Main features and specifications:

- All camera signals are carried on one lightweight fibre cable at distances of multiple kilometres;
- Three uncompressed HD-SDI signals can be carried from camera to base;
- Two 1.5 to 3Gbps paths for dual link or 3D cameras
- One 1.5Gbps path for monitoring and/or menus
- Four bidirectional data streams
- Two RS-422 paths
- One RS-232 path
- One 10/100 Ethernet path
- Genlock
- Two-way audio and intercom
- Two fibre cable options

The CopperHead 3400 is designed to provide links for 3D or dual link electronic/digital cinema production over a single lightweight fibre cable. It can connect to any two-camera 3D beam splitter or side-by-side rig, working with a 1.5 or 3Gbps HD-SDI signal from each camera.

For e/d-cinema work the unit can extend the distance between the dual link camera on-set and the production centre. The CopperHead 3400 can provide dual link HD-SDI, return HD-SDI and camera control, transmitting all signals digitally and optically for high quality.

"Traditional broadcast engineering systems like RF are still mainstays in TV interconnectivity but telecom technologies are beginning to make themselves felt in this field."
Kevin Hilton

TECHNOLOGY**NEWS**

Video-over-cellular developer LiveU has teamed up with Inmarsat satellite communications equipment manufacturer Cobham SATCOM to produce a hybrid system for live video transmission in a variety of locations.

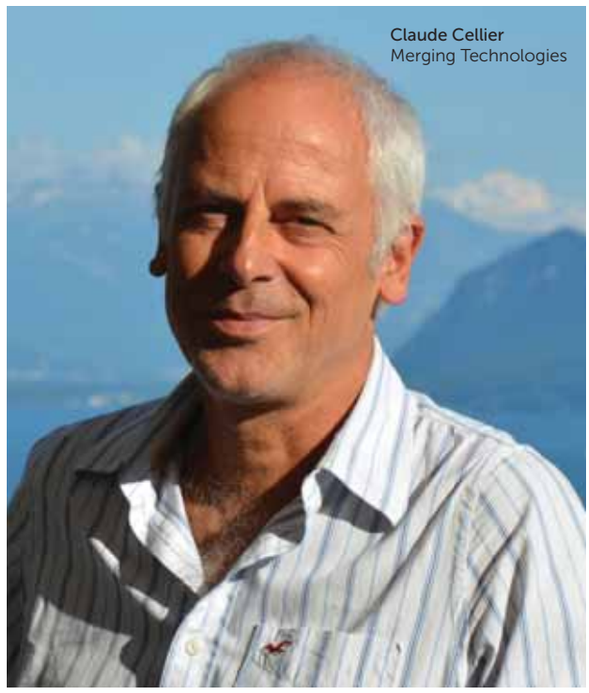
The alliance is based on the integration of LiveU's LU70 backpack with Cobham SATCOM's BGAN EXPLORER terminal products, including the EXPLORER 710, due to be launched in September 2013. Camera operators are now able to control all BGAN interfaces locally using the LU70 interface, which allows them to switch between satellite and cellular connectivity depending on network conditions.

Henrik Nørrelykke, Vice President of Land Services at Cobham SATCOM, comments: "This solution, which combines the strengths of both companies, allows news teams to enjoy the benefits of both satellite and cellular networks. We see huge potential for this combined offering for live newsgathering among our joint customer-base."

"The combined solution is extremely portable, flexible and resilient," adds Ariel Galinsky, LiveU's Vice President of Business and Corporate Development. "The full integration with SATCOM BGAN EXPLORER technology enables endless opportunities for live coverage anywhere in the world, ranging from crowded urban centres to the most remote locations."

Industry Insight: Claude Cellier

Audio Media's **Jory MacKay** speaks with the Merging Technologies CEO about staying flexible in a constantly evolving industry.



Claude Cellier
Merging Technologies

Tell me a bit about the origins of Merging Technologies.
We started as a garage operation in 1990 when I left Nagra. The first thing we developed was a graphic card and video adaptor for the Amiga platform from Commodore. That went even better than anticipated and so by 1993 I was thinking 'wow, it's easy to start your own operation'. That was exactly when Commodore decided to go bankrupt.

We found ourselves with no cash cow and a high amount of projects, one of which was an audio workstation, plus we were thinking at that time that we would do video as well.

Since inception, we've always been a company that had one foot in the software side and one foot in the hardware side. We felt that it would allow us to better master the combination of software applications based on optimised hardware solutions and knowing both sides would be a definite advantage.

How big is your team?
The development team is close to 10 people, which, crazily enough, represents more than half of our personnel. We have always been highly R&D-oriented and this is still the case today, although we now try to get a more standard balance of at least as many guys on the management and marketing/sales team as we have engineers. But for many, many years we have been more engineers than anyone else in the company.

That has its advantages because it allows us to do extremely challenging tasks in quite a short period of time, but on the other side, we have suffered by being under-staffed on the marketing and administration side of things.

The plan for the next couple of years is to keep up the same pace in engineering, but augment our sales and marketing capability.

What have been some of your favourite projects to date?
This is a tough question. It's like asking a father who their preferred child is, and if you happen to have several kids, you can't answer that!

> **"The plan for the next couple of years is to keep up the same pace in engineering, but augment our sales and marketing capability." Claude Cellier**

I've been fortunate to participate in the analogue-to-digital revolution that was some 25 years ago. When we started the company we were in the midst of a technological and operational shift from an analogue world to a digital one and, of course, this brings challenges to an engineering group, but also opportunities as it allows us to reinvent some of the workflows that people have enjoyed for the past 40-50 years.

Then I'd say that life sometimes offers you more than one big challenge and we are currently in a similar period with the migration from point-to-point connections to network connections. And again, this is a fantastic period in the career of anybody in audio or video development because it allows us to reinvent many of the aspects of what was taken for granted up until recently.

Was this latest shift in the industry what brought about the creation of Horus?
Horus is actually the culmination of a plan we started working on some eight years ago. Our customers needed more power to do more tracks at higher sampling rates and with more EQs etc…

Being a DAW-based company and already doing native solutions, we decided that the best way forward was to tap on the extraordinary increase in processing speed and reduction in cost as the PC platform.

Windows is great for doing many things, the only thing that it doesn't do well is to maintain deterministic behaviour for real-time virtual signals. So as long as you put large buffers in, you can still do reasonable things but at the cost of much higher latency than one would be accustomed to when using dedicated DSP hardware. With MassCore we were able to get rid of Windows-related shortcomings and offer a solution to make an Intel-based workstation behave in real-time with the same ultra-low latencies as offered by the best DSP implementations. In short: massive Intel processing power harnessed by a real-time kernel residing underneath of Windows.

Once you get rid of the need to have an audio card you can pump audio channels straight from your computer to the external world and back over IP-networked based layers, or protocols.

Horus is the cherry on the cake because we completed our plan, which was to use the CPU power from the Intel chips and provide dedicated Audio I/O as a Networked node in order to get rid of the audio card. We then decided on what we felt the best IP Layer-3 generation protocol would be, which ended up being Ravenna.

Ravenna is bound to become an ecosystem with several manufacturers making compatible devices. Because we are a rather small company we can't develop all of the devices a typical broadcaster requires.

Is this the way you see the industry moving forward, with companies working collaboratively to promote a protocol like Ravenna?
Yes, but it's going to take time. You may remember that 30 years ago when digital came around there were tense battles between various formats. Ravenna is not the only solution but it is certainly the standard that best matches the broadcasters' requirements.

The next thing is that we are in the multimedia period and even the radio guys are starting to inject video when they broadcast over the internet. The border line between radio and TV is becoming more confused and so what we do now with audio is bound to occur very rapidly with video. As always, we are trying to look ahead, but as you've seen, some of the things we think about can take quite a bit of time to fully materialise.
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Welcome to Microphones Guide 2013 - an International Buyer's Guide. We've scoured the ever-widening market of professional microphone products and thrown in a few informative and hopefully thought provoking articles from experts in the field.

Newly updated and refreshed for this year, we are pleased to present you with *Microphones Guide 2013*. Between these pages you'll find promotional material from ten of the world's leading microphone companies plus contact details for more than 90 other specialist microphone manufacturers.

There is almost no other category of gear in the pro audio arsenal that generates as much passion and debate as microphones. Have you kept up to speed with advances in microphone technology or are you a staunch tradionalist? Do you opt for the latest in digital technology, or are you a champion of analogue? Are you familiar with a handful of high-profile manufacturers, but would like a greater depth of awareness when it comes to microphones for more specialised purposes?

On top of the raw information you'll find in this guide, we've enlisted two microphone aficionados to help answer questions about choice, placement and technique.

Once a newsbeat journalist and games audio designer, Jerry Ibbotson has experience capturing clean audio in some of the harshest conditions and will give you tips on finding joy in recording 'stuff'.

Next, from former BBC producer Alistair McGhee, the now freelance broadcast and live sound engineer taps into his vast experiences to give you a rundown of top microphones for nearly any application.

Whatever your needs, *Microphones Guide 2013* should be able to help. It should be a place to begin your search.

Microphones Guide 2013 is a project developed by *Audio Media*, the magazine that focuses on the business of production and production technology for professional creatives, operators, technicians, and engineers everywhere.

Jory MacKay, *Audio Media*

MEET THE TEAM

Sales Manager
Graham Kirk
graham.kirk@intentmedia.co.uk

Deputy Editor
Jory MacKay
jory.mackay@intentmedia.co.uk

Head of Design & Production
Adam Butler
adam.butler@intentmedia.co.uk

Production Executive
Jason Dowie
jason.dowie@intentmedia.co.uk

Designer
Jat Garcha
jat.garcha@intentmedia.co.uk

intentmedia

AUDIO MEDIA (UK)

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Intent Media London,
1st Floor, Suncourt House,
18-26 Essex Road,
London N1 8LN, England.
www.audiomedia.com
Telephone: 0207 354 6001

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The Joy Of Recording

Have mic, will travel. It's not all about singers and instruments. **Jerry Ibbotson** spends most of his time recording 'stuff' and makes a pretty convincing case for making 'miscellaneous' the new 'music'.

It's a scary thought but I've been messing around recording 'stuff' in various forms for twenty-three years. No wonder the guy staring back at me as I shave is as grey as a badger's beard. Twenty-three years of sticking microphones in odd places, or attaching them to things you might not expect. While others dedicate themselves to the perfect music recording or capturing the essence of a voice, I seem to have developed a fetish for noises made by "things". Machines. Animals. Environments.

This love of recording out in the real world can be traced back to a faraway place in the midst of time. Bristol in 1990. While on a Post Graduate course in radio journalism I was given the task of recording a feature piece about anything I wanted, over a weekend. I chose to do a piece about motorcycle trials, where bikes are ridden over improbable obstacles against the clock and the laws of physics. I used a Sony Walkman Pro (the Daddy of portable cassette recorders back in the day) and a couple of clip mics to wire-up a friend who was competing in a trials event in Surrey. He gave me a running commentary as he rode through trials stages and this formed the core of my piece.

I don't remember much about the finished piece other than when it was played back to the rest of the course, one person ended up doodling images of motorbikes all over his notebook. By way of nothing: that person is now a highly successful Radio 4 Producer. What I learned from that exercise was the power of sound; the way it can transport people into another place. Not music or voice but the stuff that some others would consider noise, in the most pejorative way.

Whether it's sound on its own (as in radio) or to-picture, the world around us is capable of throwing up some incredible audio.

Take rain for example. I know weather is a British obsession but rain is fascinating stuff. Like the sound of one hand clapping, it only really makes a noise when it hits something. Urban rain is hard and wet and all about gurgles and splashes as the falling water hits tiled roofs and stone pavements. It makes a distinctive sound as it runs down drainpipes and drips off windowsills.

This compares to rural rainfall, which makes a hissing sound like faint white noise. This is the sound of rain falling through the sky and hitting Mother Earth - soft and absorbent.

When recording rain the main problem I've found, apart from getting a chill, is getting too close to the point of impact. If you need the audio for background atmos, you don't want too much detail in the splishes and splashes. And there's always the danger of recording the rain hitting you on its way down, picking up the sounds of water on an umbrella or expensive Gore-Tex jacket.

Sticking with weather, thunder is a curious one. I was lucky enough to be directly under a dry thunderstorm a few summers ago; lots of rumbling but no rain. This meant a clean recording with no post-processing required. Just lovely clean thunder. But heard in isolation, the claps from the heavens seemed more muted than you might expect. It was only when mixed back in with some rain that they seemed 'normal'. Which is one of the problems with recording the real world: it doesn't seem real enough at times.

Over generations we've become so used to things sounding a certain way in films and on TV that we expect the world around us to follow our rules. Thunder must be explosive but in reality it seldom is, at least in the UK. I've used some of those dry thunder samples in the mix for an animation and they really did sound distant and far away, even though they were directly over my head when I recorded them. In that context they sounded fine but they might not be right every time.

We have similar expectations of machinery. Helicopters make a 'chakka chakka' sound. They just do. Er, except they don't a lot of the time. Most modern choppers are powered by turbines - jet engines to me and you. I once recorded two Apache gunships preparing for a training sortie and they sounded like the 11.30 flight to Magaluf taxiing for take-off. The sound was all whine and

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whoosh and no 'chakka'. Like a massive gas burner. Only with guns.

I've also recorded a brace of Chinooks - the massive heavy-lift beasts - taking off and flying over my head. The sound was amazing and the sensation of being beneath four sets of huge blades was mildly terrifying. But the recorded material lacked the crucial "oomph" until I filtered out the top-end hiss of the engines and enhanced the chatter of the spinning rotors.

It's often about re-capturing the adrenaline rush you get from actually being there. Imagine standing next to a soldier firing a machine gun. He's pumping out lead-death (my copyright) and the gun's expelling spent casings at a fair old rate. If you're recording this then your heart rate is going to be raised and lots of exciting hormones are likely to be pumping round your system. The sheer volume alone will be enough to trigger a response in your body. It will be one of the most exciting things you'll have ever heard. Trust me.

Get back into the studio or even just as far as the car park and play back the recording though, and it won't seem quite as exhilarating. You're no longer standing next to the weapon and all that shooty-bang danger. Now it's just a succession of bangs and cracks. Which is why weapons in movies always sound as massive and over the top as they do. It's not about the reality, it's about the effect that sound produces in us. When recording audio, we do our best to make sure the levels are right but that has the effect of neutering some of the power and raw energy of the real thing.

Conversely, there's a reflex action that can makes us want to record quiet sound at far too high a level. I've bought library effects of ambient sounds that are pumping out at full amplitude. And out in the field (not just a loose term, I mean out in a real field) it's too easy to crank up the gain dial to get a nice healthy peak on the level meter. It's unnecessary and can be detrimental. You're unlikely to want to play the recording back at that volume and you could find extraneous sound creeping in - stuff

you don't want like the dreaded pre-amp hiss (one of my bugbears with cheaper recorders). Loud sounds are a doddle to record in comparison to the hush of a library or gallery.

I'm in no way dissing pocket recorders by the way. In the same way that some people collect old vacuum cleaners I gather hand held audio devices to my bosom. They're great for grab-it-and-go recording (a steam engine pulling into a railway station while you're waiting for a train, for example) and for sticking into tight spaces. I once put a Marantz pocket recorder inside a pub pinball machine to get the sound of the bumpers and flippers up-close. They're great for when you could do with a spare pair of hands: one to make the noise you need and one to hold the mic/recorder. I've plonked one on a pool table while I fired balls around.

When it comes to larger kit, a decent shotgun mic is something to love and cherish. I'd sleep with my Rode under the bed if I could but my wife won't have it. I've used it to record everything from swords to a car being crushed in a scrapyard. It's usually married to a Roland R26 recorder which I utterly adore. Those are just my choices though; it's good to find something that you like and can rely on to become your core kit. I combine this with hiring in other stuff, if and when I need it.

The criteria for a decent microphone, for use recording "stuff" out and about, are also slightly different, compared to working in the relative safety of a studio. They need to be durable and not complain when hauled around. The Rode I mentioned travels around in a padded metal tube, inside my kit bag, inside the hellish depths of my car boot.

I do take care of my kit though. I once heard a sound designer boast of how he'd destroyed four top-grade microphones (belonging to his employers) to record sound X. That's abhorrent to me. I've managed to do a very similar recording (involving cars and water) without damaging anything. Lube-free condoms are very useful in this respect – just make sure you ask for a receipt for your expenses (it makes the lady in Boots look shocked).

The best tools of all though are a keen ear for a nice sound (well, two ears technically) and the ability to make friends with people who might let you record their car/dog/vintage armadillo cleaning machine. I once spent a morning at an RAF base recording Tucano turbo-prop trainer aircraft (a small jet engine turns a conventional propeller). While the recordings out on the runway were great, as the planes taxied for take-off and then came back in to wind down, some of the best material was recorded in a hanger.

Imagine rows of identical military aircraft in various states of disassembly and reassembly (hopefully with no bits left over). Servos moving flaps in the wings, motorised ejector seats sliding up and down on rails, pneumatic undercarriage systems hissing and whoosing. It was fabulous. The highlight was when one of the engineers offered to let me record one of the Tucano engines being turned over by its starter motor. The jet engine wouldn't actually "fire" but he promised that we would get some great sounds.

He was right. I had to stand behind a white safety line, to avoid being sucked into the spinning blades and turned into human salsa, but that was still close enough. As the engineer pressed a button, a mammoth electric motor began turning the propeller. It started as a low whine and built in pitch and speed. And all the time a gun mic is pointing at it, capturing the building… building… sense of mechanical anger. Awesome.

I've got a friend who owns a cinema and when he mentioned he was replacing his last 35mm projector with an all-digital bit of kit I made sure I went round and recorded it in all its whirring, clattering, chattering glory. The sound of those spools and shutters and rushing reels of celluloid was, well I have to admit it, music to my ears.

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One Man's Mic List

Previously a producer for the BBC, **ALISTAIR MCGHEE** has a few suggestions for anyone looking to add a few staple ingredients to their microphone collection.

When you consider long-term investments in your audio kit, microphones are probably the safest investment. Despite digital nibbling away, spending your hard-earned on some classic transducers is probably as close to money in the bank as pro audio kit gets. Your mixers and outboard, software and computers, interfaces and plugins are now subject to the laws of digital and there'll be a newer, faster, better, version for less cash as soon as you've ripped open the virgin packaging of your latest purchase.

That's not to say nothing happens in the world of microphones, far from it. In just about every area we consider, established heavy weights are under threat from punchy newcomers, and new technologies or different takes on old techniques guarantee a constant stream of interesting product. Let's start far from home, in the wilds of location recording.

ON LOCATION

Simplifying location down to the bare essentials you need two things, a mic to put on the end of a stick and some radio personals. Let's start with the mics on the end of the pole. If there can only be one and you have a mixed workload then you'll probably opt for a shotgun mic; if you want more flexibility or work mostly indoors and closer-in, hypercardoid will most likely be your first choice.

Most of the big guns start with 'S': Sennheiser, Sanken, and Schoeps. The Sennheiser MKH 416 has been the staple of many a sound recordist's kits – since digital meant 'moving something with your finger'. The 416 sounds good on-axis, its RF technology makes it immune to damp

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The Røde NTG-3

problems, and it is more reliable than a Honda Jazz. Further up the Sennheiser food chain there's the MKH 8060, which you can get bundled with an AES 42 converter if you're lucky enough to own location kit with AES 42 inputs.

Sanken offers a line array style solution rather than an interference tube and its CS-3e garners lots of praise. You should hear it. At the expensive end of the Schoeps range the Super CMIT 2U offers stereo, digital output, and on-board DSP. At the other end of the range, the CMIT 5 has a massive reputation, and is blue, which I think is definitely a plus.

Up in the higher-priced area you should look at the DPA 4017B (part of the Reference/d:dicate series), but for those of us feeling the crunch it's not all doom and gloom. Røde has been making in-roads with its NTG3, which is also an RF-biased condenser that has received praise from all over. There's also the less expensive NTG2. Check out YouTube for millions of Røde vs 416 videos.

I've used many an Audio-Technica gun mic and they've always delivered. The company recently updated its range as well. And as you would expect, Shure, AKG, and beyerdynamic all have contenders. Sony does too, but somehow it manages to keep it very, very secret.

The key question for people in drama is often the quality of the 'off-axis' audio and where this is crucial many reach for a hypercardiod rather than gun mic, where the interference tube contributes to comb-filtering effects. For those on a budget an AKG Blueline with a CK-93 will get you going while a Neumann KM185 is great if you swing the boom like Len Hutton and have fairy-soft hands. Sennheiser has the MKH 50 and Schoeps the very highly regarded MK41 capsule wedded to a CMC 6 amp.

Back down at the more affordable end of the scale I hear good things about the Audix SCX1-HC, though I have never used one. I sometimes peruse the Gefell catalogue, it makes great mics and I bet its M210 is a peach, but I've never seen one on set.

LOCATION – PERSONAL

I'm old enough to remember when saying "ECM" was equivalent to saying 'personal mic', such was the grip of the Sony ECM 50 on the market, at least in the broadcast sector. Sony still has the ECM 77 and 88, but nowadays the competition is much stiffer. Martyn (the man who knows, at Soundkit) says that among the documentary guys, Trams are favourites; while the Sanken COS-11 is where the action is in much of the drama market. I like the COS-11 because, like the ECM 50, it has a great name,

"Shure has made these Ribbons to withstand the harsh conditions of the road. We gave these mics no special treatment when it came to handling. These KSM 313's are tough. The bi- directional characteristics of ribbons are also something live engineers might be wary of. For the loud stages I have used the KSM 313's on, this has not been a problem. With just minimal testing, the microphones just came alive. Please note we were working with Slash's already perfect and classic sounding guitar tone. The Ribbons just sounded so natural with great fullness and transparency."

Kevin "Tater" McCarthy, Monitor Engineer, Slash and Judas Priest

"The KSM313 gives a much fatter, warmer, rounder and rich sound. I have just 2 of them, one on Slash's dirty sound, and one on his clean. I found I got a great sound with them with very little effort or EQ'ing – for example, previously on Judas Priest, to achieve that huge guitar sound I needed to use 3 Shure mics on each guitar, usually an SM57, a KSM27 and a KSM32, but with Slash I used just the 313..."

Martin Walker, Production Manager & FOH Sound for Slash

DPA's Reference Series/ d:dicate

which I think is important, and it sounds good. But then I like the Tram's accessories, especially the windshield that looks like a mouse. How do we decide? Fight? No – buy one of each.

As you would expect, Sennheiser has a range of personals to suit every pocket, (well, every biggish pocket) though they don't seem as popular as add-ons to other manufacturers' radio kit. DPA is a big player in the personal market. It makes great mics and does kits with extras for when you don't want to see the mic. Mind you, if I spend all that money on a mic I normally want everyone to see it. Give me a huge mouse-shaped windshield with "DPA: I bought the best, so don't ask to borrow it" written on it. And while I'm on the subject, hair clips don't work for everyone – know what I'm saying?

Don't tell anyone, but AKG makes some tidy personals, and if you are working in churches or other 'houses of worship', my bet is you'll see a lot of Audio-Technica and Trantec, though my experience of these is limited.

LIVE

First, buy a Shure Beta SM58, in fact, buy two. You can always stick the other one on a guitar when you want a lot of rejection (of the acoustic type).

However (whisper it not in the corridors of Shure) but AKG (D7) and Audix (OM5) make some tidy live vocal mics. There are of course other players. Neumann has the KM 104 and 105, and if you fancy bucking the trend how about a beyerdynamic ribbon mic like the TG V90r. It looks cool and has a great name – if you're in the business of naming French trains.

Audix BP7 Pro kit

Sennheiser is another staple – the evolution range has vocal mics to suit everything, and churches are awash with them, the dynamic 835 being very popular. There is a version of this with a switch, which gets otherwise intelligent and capable professional sound engineers every time.

Okay, what about the rest of the stage? Shure SM57s for cabs, or AKG 414s, or both. If you can't run to a 414, how about an Audio-Technica 4040? Great name too. Overheads tend to be from the classy end of practical, on the basis that the further away the mic is from the thing you want to record the better it has to be. Again 414s are very popular here or, still from AKG, a C430 if you are on a budget. The Neumann KM184 is a great mic and useful on all sorts of instruments.

There's a tonne of whole drum kit solutions. Audix has a very reasonably priced set, Audio-Technica has something priced even lower, and Shure and beyerdynamic have a range of options. For a much bigger investment, there's the Earthworks full drum kit set.

According to live sound lore, you will need an AKG D12 for the kick drum. I know it's vintage and acoustically a little soft, but on the other hand you get to say, "I'm rigging a D12 on the kick."

Buying a mic for the keyboards is probably a waste.

STUDIO

If you have a lot of money buy Neumann U87s. If you don't have a lot of money, steal some Neumann U87s. If you have lots and lots of money, buy a Telefunken (original) U47 but don't tell anyone. They will kill you, and if they don't, I will.

For the rest of us, the world is your oyster. SE Electronic mics have been making mighty big waves for the last few years and its range is incredible. From affordable mics to get you started, to ribbons at give away prices, and the very capable 4400 (guess which AKG it's competing with?). The company has tube mics and even a ribbon with Rupert Neve inside.

AKG C414

Talking of AKG, its pride of place goes to the 414XLS, but the ULS series with interchangeable capsules are also top performers. At the peak, AKG's C12 VR claims to be an exact copy of a microphonic legend. Nobody gets fired for using a C12 on the vocals.

For classical stuff, omnis rule, and in the world of omnis DPA and Schoeps slug it out. Let's face it, they both make stunning mics capable of great results, but don't forget the high end of Sennheiser's MKH range or Earthworks - their omnis are very highly sought after. If it's a figure-of-eight you're after, ribbons make a lot of sense. I loved the Royer 101 recently, but there's loads of choice – classics from beyerdynamic and Coles, and affordable upstarts from sE, Shure, and Audio-Technica.

While back at condensers, Gefell I'm sure should be on your wish list if you have the cash. And if not, Røde has a great range. If you're looking for an all-in-one stereo solution there are lots to choose from.

Sennheiser MKH 8040

For the higher end of the money scale,

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Audio-Technica's AT8464 dual-ear microphone mount and BP892cW MicroSet headworn microphone

the Schoeps sphere is there for an all round solution, but unforgiving in bad acoustics. Otherwise, I'm going British on this: Soundfield or nothing. It's price competitive with stereo mics from the big German manufacturers, and there's even a battery powered location version.

REPORTER MICS

A reporter's mic has to be durable, durable, and a bit more durable. After all, you might have to defend yourself with it. For many years beyerdynamic has been king of the hill with the MCE 58. For sheer durability the Electrovoice RE50 takes some beating, literally. You could beat an armoured personnel carrier with it and still file the report. The Sennheiser MD 46 (cardioid, or the 42 in omni-style) has higher output than the 58 and I think a nicer finish. I have found it a touch bright though.

Last year Audio-Technica released the BP 4001 and 4002 reporters mics in cardioid and omni, and in my book are well worth a listen. AKG has the D230, which I haven't used much, and to my shame Shure has a whole range that I've never tried either.

RADIO STUDIO PRESENTER'S MIC

The Electrovoice RE20 is a staple here – a seriously big mic. If you buy one of these, get some spare elastics for the suspension. This microphone will probably survive a nuclear attack. The Neumann BCM 104 is another – though a note to Neumann, please don't have mics for different things with the same numbers.

How about Neumann TLM 102s for guests? Røde has an end address broadcast mic that I haven't tried. A colleague swears by a Beta 58 for durability, and the Audio-Technica 4033 or 4040 would be good choices for environments where not everyone is a clumsy idiot... If your presenter insists on working too close to the mic you might want to try a gun mic (or maybe just a gun), even though it's not an ideal application. Note that for some presenters, anywhere under 300 metres is too close to a microphone. Try an AKG Blueline with a CK98, one of the inexpensive Rødes, or maybe a beyerdynamic 836. Talking of beyerdynamic, what about an M201? Simple black classic, but not for desks with noisy mic amps.

Blue Microphones' Dragonfly

HEADWORN

One of the challenges for headworn mics is the battle between robustness, discreteness, and audio quality. It's difficult to get all three. If you are a careful user, I'm a big fan of the Audio-Technica AT 892 and it won't break the bank.

Heading higher up the cost ladder, DPA offers a range of solutions and has a choice of single ear attachment or, for more security, a double ear solution. Sennheiser also has some high-end solutions and a range of wireless kit to go with them. But let's not get into wireless here. I hear lots of good things about the Shure WH30XLR: it majors on ruggedness and is attractively priced.

Lewitt LCT240

THE REST OF THE CUPBOARD

For a lip mic, check out the Coles 4104. Another great name, another great product. When you need one of these, nothing else will do, and it makes radio people like me very happy to see the mic obscuring the presenter on TV. As an added bonus you can get the interns to clean the spit guard every now and then, just to see how committed they are to broadcasting.

As for a PZM or boundary mic: Crown do these. You used to be able to get an unbalanced one at Tandy's for thirty quid. Not now, I suspect. A Gefell KEM970 is described on the website as having 'non-rational symmetry'. More simply, it's a line-array mic that does things nothing else does; but never attempt to read the price while standing up. Gefell also brought back the M7 capsule in 2012 in the form of a CMV 563. I want one, you want one, we all want one. You can even buy an M7 watch to impress your friends (for only €279, a snip). A Coles 4038: I don't want to listen to it (though it sounds pretty good even after all these years). I just want to look it, and raise a glass...

Microtech Gefell UM75

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CK-1 Pencil | CK-6 Condenser | CK-7 Multi-pattern Condenser | CK-28 Multi-capsule Tube | CV-12 Multi-pattern Tube | CR-14 Ribbon

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How a legendary product evolved

For over 65 years, leading musicians and engineers have used legendary AKG products to capture their sound so their audience hears every nuance. The C414 family has been one of the world's most widely-used and respected studio and stage microphones in audio history. AKG has continually set new benchmarks for useful features, improved technical specifications and ease of use in order to be the professional solution for ever-demanding recording studios, broadcast stations and audio engineers.

C414 technologies and history:

AKG SOUNDS BETTER

1953 – C 12

The brand-new C 12 Model AKG sets a new benchmark. Besides excellent sound quality it was the first Large Diaphragm Microphone with a remote control unit for changing the pickup pattern. One of the first customers was the BBC. Meanwhile the AKG C 12 has become one of the most sought-after microphones of all time.

1962 – C 12 A

The introduction of the C 12 A, the forerunner of the now-classic C 414 design. The C 12 A had a Nuvistor tube in its preamp section and its miniaturised housing became a trademark of AKG's large-diaphragm microphones. This model was marketed until 1976.

1971 – C 414 comb

The launch of the first C 414 model, the C 414 comb. This model had a special module with a permanently-attached cable, but was a solidstate design that allowed upgrades as technology improved and also permitted phantom powering instead of requiring an external supply.

1976 – C 414 EB

In response to the emergence of 3-pin XLR-type connectors as the world standard, AKG introduces the C 414 EB with this connector integrated into the microphone. The integral connector eliminates the need for the cable module, so that the microphone can be easily used with different cables to meet application requirements.

1980 – C 414 EB-P48
The launch of the C 414 EB-P48: the first model with black housing. This model featured certain technical improvements that lowered self-noise and improved sensitivity and headroom made possible by standardising on 48 V phantom power, which was becoming standard, especially in the U.S.

1986 – C 414 B-ULS
Introduction of the C 414 B-ULS, a model that combined several milestones in the development of the C 414:

1. ULS technology in its electronic circuitry that achieved maximum signal linearity.
2. The C 414 B-TL, the first transformerless version of the C 414.
3. High SPL capability and low noise made the C 414 B-ULS the most popular, longest-lived C 414 model. It was in production for 18 years.

1993 – C 414 B-TL II
The C 414 B-TL II, the first sonic alternative to the C 414 B-ULS, was introduced.
This microphone was designed to meet customer demands for a microphone with more "presence" to its sound.

2004–C414B-XLS/C414B-XLII
The new XLS and XL II models were developed to give professional users the improved functionality they need, with control switches including a status LED for selecting the polar pattern, pre-attenuation pad and bass cut/roll-off. An overload indicator function, status indicators and a positioning aid have also been integrated into the microphone.

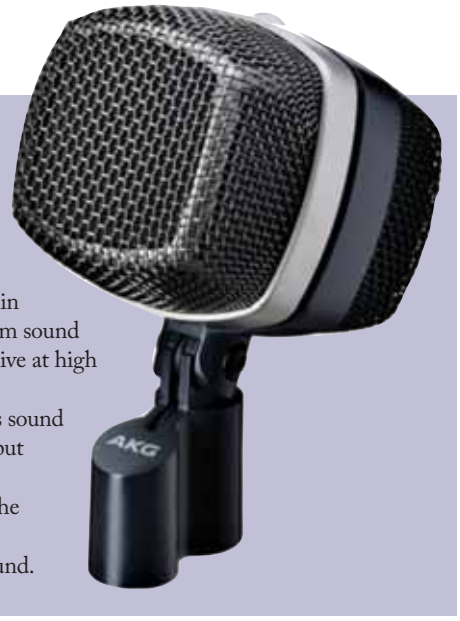
2009–C414XLS/C414XLII
The new C 414 XLS and the C 414 XLII are AKG's answer to customer demand. Nine pickup patterns that enable the engineer to choose the perfect setting for every application. In addition, gain-before-feedback had been maximized and signal-bleeding from other sources was minimised.

Integrated suspension to reduce mechanical noise
Rugged double mesh grill for unaffected acoustics and high RF immunity
One Inch Large Diaphragm with patented Edge-Terminated Back-Plate Technology provides freely-vibrating membrane for a smooth and wide frequency response and high transient detail
Switchable 150 Hz, 6 dB/octave low cut filter reduces rumble and wind noise effectively
Switchable 20 dB Attenuation Pad for use in close-miking – up to 156 dB SPL
Well designed circuitry provides high sensitivity, maximum SPL capability and minimum noise
All-metal die-cast body with shock- and scratch-resistant finish
Gold-plated XLR-type output connector for loss-free signals

The C214 large-diaphragm condenser microphone has been designed as a cost-effective alternative to the high-end C414 family. Like the C414, the C214 offers a supreme one-inch capsule on an integrated suspension to reduce mechanical noise. A switchable 20dB attenuation pad allows recording of loud sources of up to 156dB SPL. A switchable bass-cut filter allows close-up recording with almost no proximity effect.

The C214 captures sound by combining one capsule of the legendary C414 dual-capsule system and the patented AKG Back-Plate Technology, resulting in an outstanding performance close to the famous C414 XLII.

D12 VR
REFERENCE LARGE-DIAPHRAGM DYNAMIC MICROPHONE



The D12 VR is a reference large-diaphragm dynamic microphone with cardioid polar pattern. Designed specifically for kick-drum recording applications, the microphone has a thin diaphragm to enhance the low frequency performance. Its warm sound is realized by the original C414 transformer, especially impressive at high signal levels.

The D12 VR features three active filter presets to match its sound shape with the kick drum's character. When activated, the output level is automatically reduced by 10 dB. The filter settings can be controlled using a switch on the microphone body. Without phantom power, the microphone operates in passive mode and delivers the instruments pure sound.

INFORMATION

AKG by HARMAN

AKG Acoustics GmbH
Lemböckgasse 21-25
1230 Vienna, Austria

T: +43 1 86654-0
W: www.akg.com

The Drive For Innovation, Quality and Consistency

The youngest of the world's 'big four' microphone brands, Audio-Technica has employed design innovation and advanced manufacturing to consistently break the price/performance barrier with leading product for studio, broadcast, installation and live production applications.

As a world leader in the design and manufacture of high-performance microphones and wireless microphone systems, Audio-Technica has developed market-leading product ranges for music recording, broadcast production and live production. In each of these areas Audio-Technica delivers products that have raised the performance bar and established a reputation for design, engineering and build manufacturing excellence that is second to none.

It's an engineering and business philosophy that originates with the company's inception in 1962 when founder Hideo Matsushita introduced a moving-magnet-type stereo phonograph cartridge. The company went on to design and produce phono cartridges and tone arms, both under its own brand and for others, including the legendary NHK broadcast.

The same high-precision design and engineering techniques that made the company's various cartridge designs so successful were also applied to the manufacturing of microphone and headphone products throughout the 1970s and 1980s, earning Audio-Technica a prestigious status among audio professionals.

The AT2020USB+ features improved A/D conversion and headphone output

IN THE STUDIO

It was with the introduction of the AT4033 in 1992 that Audio-Technica established a leading position on the studio recording market.

The AT4033 was the first ever high-performance large studio condenser microphones priced at under USD$1000, exploiting the very latest design, engineering and production techniques, the AT4033 provided performance from a back electret design that rivaled famous studio condenser models several times more expensive.

Special accelerated diaphragm aging methods ensured performance remained consistent over time, providing a more linear response over a wide frequency range, even at high SPLs.

Modern production methods enabled a level of consistency that ensured the identical performance of every microphone with no necessity to produce the microphones in 'matched pairs' for stereo recording. Selling in thousands, the success of the AT4033 established the company's reputation as a high-end studio microphone manufacturer and spawned the 40 Series large diaphragm condenser range. All models in the 40 Series adhere to the same paradigm of high performance and value for money and – as testament to their quality – also come with the company's Lifetime Warranty.

Building on the reputation of the 40 Series, Audio-Technica's AT5040 – new for 2013 – is the first model in Audio-Technica's flagship 50 Series of elite studio microphones.

The hand-built, side-address condenser offers remarkably musical high-fidelity performance, with profound realism and depth, presence and purity of sound. Featuring a proprietary breakthrough element design, the AT5040 employs four ultra-thin (2 micron) rectangular diaphragms that function together to provide a combined surface area unachievable in a standard round diaphragm. By using four diaphragms as a single capsule, the AT5040 achieves remarkably large surface area without the increased weight

"Every AT5040 is hand-built and inspected for 100% quality control and is housed in an elegant case of aluminium and brass with grey chrome plating for durability and low reflectivity."

The ATM510 cardioid dynamic mic is a well-balanced, rugged stage vocal mic

and decreased transient response that are the expected limitations of expansive size.

Another key AT5040 design feature is advanced internal shock mounting that effectively decouples the capsule from the microphone body. For additional isolation, each AT5040 is also provided with Audio-Technica's new AT8480 shock mount. Featuring a proprietary design, the AT8480 was engineered not only to isolate the microphone, but to rid the apparatus itself of any unwanted resonances and other audio aberrations that could be transmitted to the microphone. It also features a unique locking mechanism that holds the microphone securely in place.

Every AT5040 is hand-built and inspected for 100 per cent quality control and is housed in an elegant case of aluminium and brass with grey chrome plating for durability and low reflectivity. Discreet components have been selected for optimised capsule performance; in fact, every aspect of the microphone has been carefully considered to minimise any effects on the audio signal.

Designed as a first-choice vocal microphone with smooth top end and controlled sibilance, the AT5040's large-diaphragm characteristics and fast transient response also make it ideal for recording acoustic instruments such as piano, guitar, strings, and saxophone.

Also new for 2013, at the other end of Audio-Technica's microphone line-up, the AT2020USB+ adds improved analogue-to-digital conversion performance and headphone output to the hugely popular AT2020USB.

The AT2020USB+ offers studio-quality articulation and intelligibility perfect for home studio recording, field recording, podcasting and voiceover use. The mic's built-in headphone jack has a volume control that allows users to directly monitor their microphone signal in real time, and a built-in high-output internal headphone amplifier that delivers superior clarity. The microphone also offers a mix control that can blend its signal with pre-recorded audio (perfect for DJ/karaoke use). The unit's cardioid pickup pattern delivers excellent off-axis rejection, while its A/D converter – with a 16-bit 44.1/48 kHz sampling rate – ensures extremely articulate sound reproduction. The AT2020USB+ is compatible with Windows 7, Vista, XP and 2000, and Mac OS X. It is powered from a USB Bus and includes a tripod desk stand, stand mount, USB cable and soft protective carrying pouch.

ON STAGE

In recent years Audio-Technica has won devotees among artists and sound engineers alike for its Artist Elite series stage microphones. With users and endorsees as diverse as Metallica, Gwen Stefani, Katherine Jenkins and Alicia Keys, AE Series handheld models – both condenser and dynamic – are famed for their sound quality.

On backline too, Audio-Technica is a de facto standard for many world-class engineers including 'Big' Mick Hughes (Metallica, Slipknot), Dave Bracey (Robbie Williams) and Ben Hammond (Deaf Havana, Devin Townsend Project). For these and many others, models like the AE2500 dual element design, the AE3000, AT4050 and ATM350 are essential tools of the trade. These live production mics are now joined by the re-engineered Artist Series, offering unrivalled performance at competitive price points. Among the highlights, the high-performing ATM510 cardioid and ATM610a hypercardioid dynamic mics are rugged, great-sounding workhorses built for smooth, natural vocal reproduction and to handle life on the road. <

Audio-Technica's flagship AT5040 features an unusual four diaphragm design for exceptional purity and depth of tone

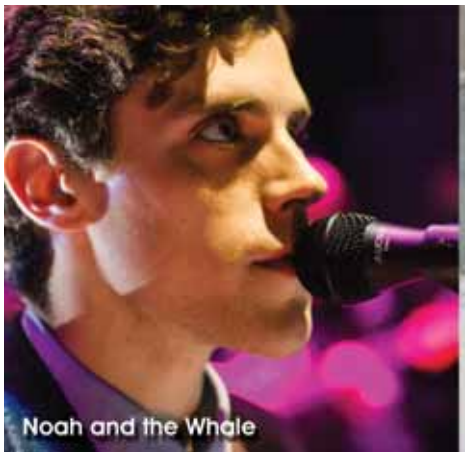
"Featuring a proprietary breakthrough element design, the AT5040 employs four ultra-thin (2 micron) rectangular diaphragms that function together to provide a combined surface area unachievable in a standard round diaphragm"

INFORMATION

audio-technica
always listening

Audio-Technica Ltd (UK)
Unit 5 Millennium Way
Leeds
LS11 5AL

T: +44 (0) 113 277 1441
W: www.audio-technica.com
E: sales@audio-technica.co.uk



Audix – A History of Performance, Innovation and Excellence

Year after year, Audix microphones are recognised for their innovative design, performance, quality, durability, and value. From concept to completion, the on-site research and development team combined with an in-house manufacturing facility enables Audix to proudly provide products designed at the firm's Wilsonville, Oregon USA headquarters.

OM SERIES – PIONEERING VLM™ CAPSULE TECHNOLOGY

In 1986, Audix designed and introduced a proprietary capsule for the OM Series utilising VLM (Very Low Mass) technology. The principle of the VLM technology is based on a very lightweight diaphragm, which allows for extremely fast, accurate processing of incoming signals. The result is clear and natural sound reproduction, extended frequency response, and high SPL (Sound Pressure Level) handling. VLM technology, combined with a very tight hypercardioid polar pattern and aerodynamic body design established the OM Series as a new class of vocal microphones.

The OM5, OM6, and OM7 are the vocal microphones of choice amongst sound engineers and top touring artists such as Alanis Morissette, Pearl Jam, George Strait, Red Hot Chili Peppers, Willie Nelson, Bonnie Raitt, The Doobie Brothers, Blink 182, Jimmy Eat World and Crosby, Stills & Nash; to name a few. This series continues to grow in popularity year after year and has become legendary in the industry.

VX5 AND VX10 – ACHIEVING NEW STANDARDS IN HANDHELD VOCAL CONDENSER PERFORMANCE

Condenser microphones are somewhat challenging to use in a live stage environment. It is typical for these types of mics to be prone to feedback due to higher sensitivity, and less capable of handling high sound pressure levels. However, many of today's jazz artists, acoustic based groups, and singer/songwriters demand studio-quality sound on stage. Audix has responded to this demand with the development of two outstanding condenser microphones: the VX10 and the VX5.

The VX10 features a 21mm capsule and requires 48-52 volts phantom power for operation. Ideally suited for stages with one featured vocal artist, the VX10 will provide unmatched studio quality sound for live broadcasts and performances.

The VX5 features a 14mm capsule and switches for -10 dB pad and bass roll-off. The VX5 is an electret condenser vocal microphone requiring phantom power of 18 - 52 volts. Providing a very wide frequency response with rich lows and detailed highs, the VX5 will meet the most demanding requirements for a wide variety of live sound applications.

THE D SERIES AND I5 DYNAMIC VLM™ INSTRUMENT MICROPHONES — COMPACT DESIGN, POWERFUL PERFORMANCE

Dynamic VLM instrument microphones are chosen for live performance due to their ruggedness, utility, high SPL handling, and pattern control. The introduction of the D Series in 1993 broadened the category of dynamic instrument microphones and created new possibilities for drum and percussion applications. Audix combined VLM capsule technology, transformerless design, and precision machined aluminum housings to achieve new performance standards in live sound and recording. With the introduction of the D6 in 2002, Audix shifted the paradigm for kick drum microphones.

The tradition continues with the recent development of the i5 — a well-rounded general-purpose utility mic with outstanding results on snare and guitar cabs.

LEADER OF THE PACK

Being the first to introduce the concept of professional microphone assortments, Audix simplified the approach to selecting microphones for drum kits, percussion ensembles, piano and general studio sessions, by offering an array of pre-packaged microphone collections. These signature 'mic

packs' contain models designed to operate congruently while capturing and isolating each individual sound distinctively and naturally. All microphone packs are equipped with a variety of clips and accessories, all of which are packed securely into a handsome aluminum carrying case. The Audix microphone collections provide an extraordinary value and a lifetime of performance.

SCX25A – DESTINED TO BECOME A CLASSIC

In the world of studio condensers, a microphone only becomes a classic when it proves itself to be indispensable. The SCX25A is just that. The mic has a large diaphragm capsule housed within a unique, patented internal shock mount that is isolated in an intricate machined brass ring. This microphone delivers its own signature, pure, open-air sound with exceptional detail and realism.

The SCX25A has proven to be an outstanding microphone on piano. Because of its small footprint and acoustic behavior, it can successfully be used on a short stick or in a closed lid environment; one of the biggest challenges facing any microphone. The SCX25A is ideally suited for any acoustical application including vocals, guitar, strings, brass, overheads, woodwinds, ensembles, and room miking.

THE MICROS™ — PUSHING THE LIMITS OF SIZE AND PERFORMANCE

Representing one the most intriguing innovations in microphone technology, the Micros™ are the world's smallest condenser microphones with integrated preamp and detachable cable. The Micros™ also feature studio quality sound, very low self-noise, and up to 129 dB of dynamic range. Additional characteristics of these mics include complete immunity from RF, tailored frequency response, three application specific levels of sensitivity, and a wide variety of optional clips and accessories.

Coupled with the MicroBoom™, a portable lightweight carbon fibre boom arm available in varying lengths of 24, 50, and 84 inches, the Micros™ have raised the bar when it comes to overhead choir miking applications.

The M1255B features an unprecedented output sensitivity of 32 mV/Pa and operates on a minimum phantom voltage of 18 volts. It is ideally suited for distance learning and conference systems. The most recent products developed utilising this highly sensitive capsule include the M40, M55 and M70 ceiling microphones, which are designed for permanent installation. <

Audix's state-of-the-art manufacturing facility focuses on R&D, automation, and CNC machining equipment. This not only enables Audix to control the quality of the products from start to finish, but also allows for continual improvements and enhancements as new materials and processes become available. While the process of capturing acoustic sound waves and converting them to electronic impulse is a very complex process, Audix always strives for the simple, most elegant solutions. This is apparent from the design and performance of products such as the OM Series, VX5, VX10, D Series, i5, SCX25A, and the Micros™.

INFORMATION

AUDIX MICROPHONES

Audix
9400 SW Barber Street,
Wilsonville, OR 97090, USA

T: +1 503 682 6933
W: www.audixusa.com

UK Distribution:
SCV Electronics Ltd.
40 Chigwell Lane,
Oakwood Hill Ind. Estate,
Loughton, Essex, IG10 3NY

T: +44 (0) 208 418 1470
W: www.scvlondon.co.uk

Your Microphone, Your Sound

In an age of indistinguishable mics, Blue's designs are as unique as the artists who use them. Each microphone is engineered with a unique sonic signature for specific recording needs, including new products unlike anything seen or heard before.

ABOUT BLUE

Blue Microphones was founded in 1995 with the belief that technical innovation and cutting-edge design can combine to create a family of audio tools that not only look inspiring, but sound like nothing else on the planet. Blue has created a line of mics with custom-designed sonic signatures that make each microphone truly unique and perfectly situated to take advantage of today's increased digital bandwidths. Or to put it simply: the perfect analogue devices for the digital age.

Starting with state-of-the-art technology that ensures the purest possible signal path, along with Class A fully discrete circuitry (no ICs, pads, or filters), each microphone contains its own hand-tested propriety capsule and is designed to capture specific sonic signatures in precise ways. The result is a portfolio of professional microphones that create a full palette of sounds, enabling artists to realise the sonic landscape of their vision.

Interchangeable Capsule Series

Designed for the most discerning recordists, the Interchangeable Capsule Series contains microphones capable of providing a wide palette of tonal characteristics and pick-up patterns to satisfy even the most discriminating tastes. The series integrates the best of Blue's discrete Class A circuitry with a unique and revolutionary system of interchangeable capsules that provide the engineer with a wide range of potential tonal characteristics. This series is employed in the world's most respected studios and is recognised by industry insiders as the world's premier microphone system.

Bottle •
Flagship tube mic with custom transformer and interchangeable capsule system

Bottle Rocket: Stage Two •
Class A discrete tube mic with interchangeable capsule system

Bottle Rocket: Stage One •
Class A discrete solid state mic with interchangeable capsule system

Multi-Pattern Series

When your recording environment requires a bit of versatility, Blue's Multi-Pattern Series microphones deliver. Designed around Blue's custom hand-tuned capsules, these uniquely designed mics offer a diverse sonic landscape whether it's a guitar in cardioid mode, background vocals in figure-of-eight, or an orchestra in omni. Plus, if your recording application requires M/S, X/Y, or a simple stereo set-up, a pair of these multi-pattern mics opens up your recording space to even more possibilities.

Cactus • Large diaphragm Class A discrete multi-pattern (9) tube mic
Kiwi • Large diaphragm transformerless solid state Class A discrete multi-pattern (9) condenser mic
Reactor • Large diaphragm multi-pattern (3) condenser mic

Signature Series

Every Blue microphone in the Signature Series contains its own propriety capsule that is hand-tested to capture a specific sonic signature. Blue's philosophy is to create microphones that are unparalleled for their intended application. For example, the Mouse is a low-frequency focused microphone that specialises in capturing the bigger-than-life lows of kick drums, bass amps, and deep vocals; whereas the Dragonfly is designed specifically to capture and thicken thin sounds from soprano vocals and instruments like drum overheads.

Mouse • Large diaphragm Class A discrete cardioid condenser mic with rotating head
Woodpecker • World's first and only ribbon mic with true top end
Blueberry • Large diaphragm Class A discrete cardioid condenser mic
Dragonfly • Large diaphragm Class A discrete cardioid condenser mic with rotating head

Essential Series

Designed to be the versatile microphone every musician craves, the Essential Series is capable of capturing the essence of any audio source. From guitars, basses, and drums to woodwinds, brass, and vocals, these microphones deliver the full spectrum of audio for today's demanding digital recording environment. Whether you're just starting out and need your first great mic or you're looking for the perfect 'go-to' mic in the studio, the Essential Series mics offer the best range – and value – for your recording needs.

Baby Bottle • Large diaphragm Class A discrete cardioid condenser mic
Bluebird • Versatile large diaphragm Class A discrete cardioid condenser mic
Spark • Solid state cardioid condenser mic with Focus Control

en•CORE Performance Series

All of the knowledge, craftsmanship and innovative technology we've poured into our high-end studio microphones has now been transferred to the stage. Designed to deliver exceptional all-around performance and capture your unique, individual sound, the en•CORE family combines style, craftsmanship, and gorgeous durable plating finishes with Blue's proprietary capsule technology. Each mic capsule is hand-tuned for the utmost in detail and clarity, delivering minimal handling noise without pads or filters. From its heavy-gauge grill and barrel to its reinforced ring and durable plated finishes, every en•CORE mic can take a beating and still deliver the performance of a lifetime, for a lifetime of performances.

Blue For Your Digital Life

In 2005, Blue burst into the realm of consumer electronics with the Snowball, the world's first professional USB mic. While the Snowball was designed specifically for recording vocals, instruments, and bands directly to computer via USB, it was quickly and readily adopted by those seeking high-quality audio for other applications like creating podcasts, recording voice-overs, narrating videos, capturing sound effects, and even chatting online.

Blue's audio DNA continues today with exciting innovative products like Tiki with its noise-cancelling technology to improve the intelligibility of online communication, and Spark Digital, which is the world's first studio condenser microphone to offer both USB and iPad connectivity.

INFORMATION

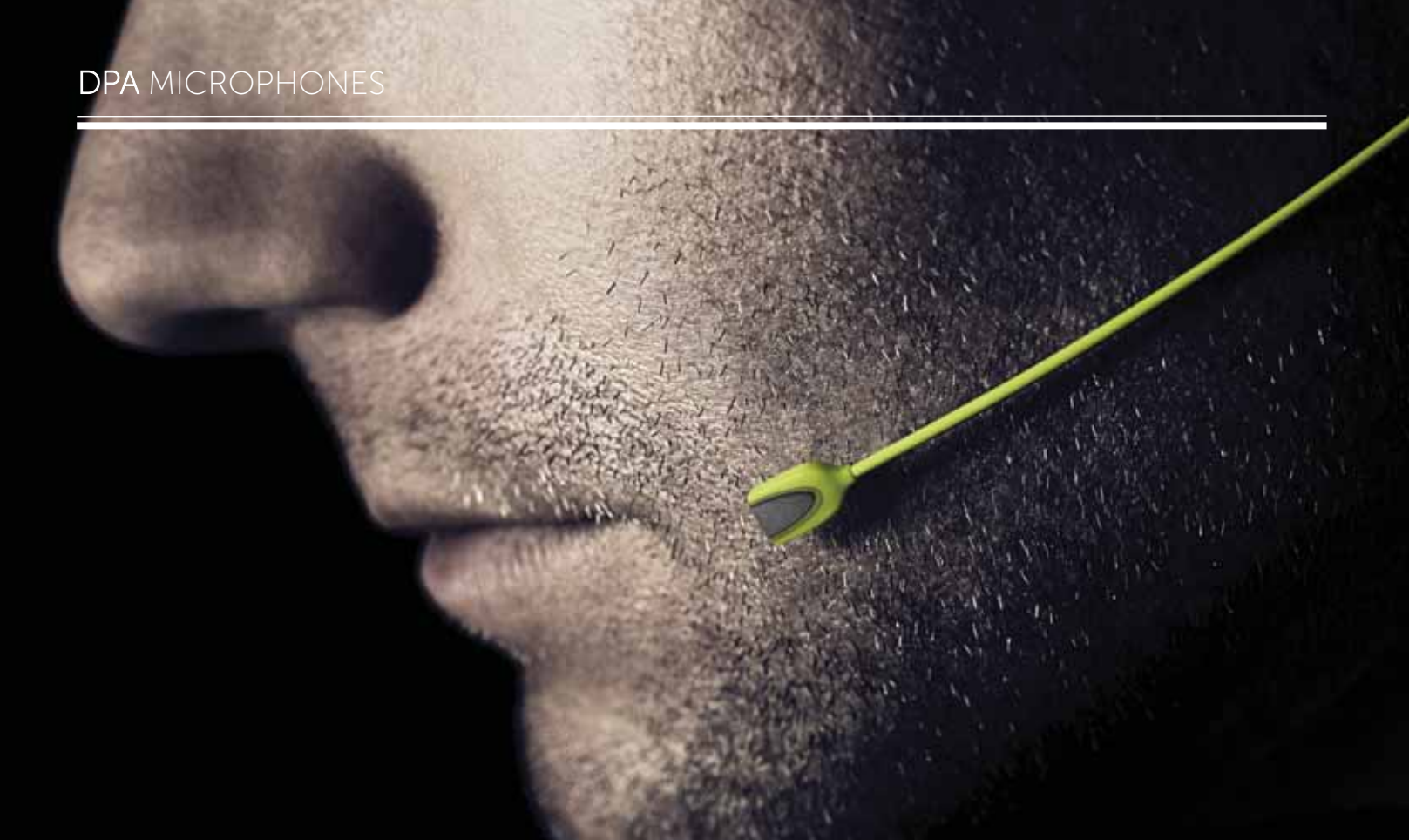
Blue Microphones

Blue Microphones (North America)

W: www.bluemic.com
T: + 1 818 879 5200
F: + 1 818 879 7259
E: service@bluemic.com

Blue Microphones (Europe)
Music Psych Limited
33 Ripplevale Grove,
London, N1 1HS

T:+ 44 (0) 207 607 6005
E: support@musicpsych.com
W: www.musicpsych.com



Professional Microphone Solutions For Any Situation

A leading Danish professional audio manufacturer, DPA Microphones produces the best, most accurate microphones available, guaranteeing stunningly natural sound quality and zero colouration. Whatever the application, venue or instrument, DPA can provide the optimum microphone.

D:FACTO™ II VOCAL MICROPHONE

The d:facto brings true studio sound to the live stage. Where sound pressure levels are a challenge, the d:facto is up to the task with its 160 dB SPL threshold, three-step pop-protection grid and best-in-class low handling noise. The d:facto offers excellent sonic reproduction with all the detail and balanced, linear phase and frequency response users have grown to trust from DPA.

d:facto™

DPA d:facto™ Vocal Microphone bridges the gap between live stage performances and studio recordings

DPA D:FACTO II – WIRED OR WIRELESS?

- Adapters for wireless systems: Shure, Sony, Sennheiser, Lectrosonics, Wisycom
- Extraordinarily natural sound
- High separation
- Extreme SPL handling: 160 dB
- Superb definition

D:DICATE™ RECORDING MICROPHONES

DPA's long history in the art of creating test and measurement products is brought into play in the d:dicate category. This specialised range of microphones features technical specs that have become the envy of the industry, bringing low noise and pristine accuracy to live, broadcast and studio applications.

d:dicate™

Any d:dicate™ capsule can be transformed into a new configuration by combining it with one of the preamplifiers for regular mic holder or stand use, active cables for suspension, or boom poles for podium or floor stands

MODULAR FLEXIBILITY WITH D:DICATE

- Interchangeable capsules, preamps, active cables and booms
- State-of-the-art signal integrity
- Noise elimination
- Extraordinarily tight specifications

D:VOTE™ 4099 INSTRUMENT MICROPHONES

Perfect for low profile, close placement in broadcast and live applications, the d:vote 4099 is easy to place in tight spaces. Low or high SPL is not a problem as the d:vote comes in low- or high-sensitivity versions for capturing the loudest drum kit or the most subtle nuances of orchestral instruments. Optional adapters are also available for wired or wireless connections.

DPA D:VOTE™ 4099 INSTRUMENT MICROPHONES

- Superior gain-before-feedback
- Flexible and easy mounting
- Detachable cable
- Versatile gooseneck extender
- Wireless compatible

d:vote™

From piano, guitar and strings to woodwinds, brass and drums, DPA d:vote™ 4099 sounds equally impressive on them all

MINIATURE MICROPHONES

Miniature microphones and accessories cover a specialised range of products for instrument and voice reproduction for broadcast, live, installation, and field applications. Like all DPA products, the emphasis is on quality of sound, durability, repeatable results, and ease of use. DPA miniature microphones come in a variety of colours for easy concealment when body- or costume-worn for theatre, film and TV.

DPA MINIATURE MICROPHONES

- Natural, highly detailed sound
- Available in different sensitivities, cardioid and omnidirectional
- Accessory kits for stereo recording, instrument miking, electronic news gathering, and film
- Wireless compatible

D:FINE™ HEADSET MICROPHONES

DPA's headset microphones set the standard for head-worn transducers. They are ideal for singers, public speakers, actors, musicians and broadcast professionals who insist on superior voice reproduction, comfort, easy setup, and a discreet look. The microphones come in several colours, two patterns, several boom designs. The d:fine headsets are also offered in single- or dual-ear mounts to cover a broad range of applications.

DPA D:FINE™ HEADSET MICROPHONES

- Mic of choice for theatres and broadcasters
- Easy to adjust, extremely stable
- Natural, highly detailed sound
- Resistant to wear and tear, sweat and humidity

DPA d:fine™ headset mics deliver the ultimate in high-SPL, distortion-free sound reproduction allowing vocalists to focus on their performance

ABOUT DPA MICROPHONES

Drawing on more than five decades of world-class condenser microphone design, DPA has manufactured ground-breaking products in its own name since 1992. The company is represented by professional audio distributors and dealers in more than 50 countries worldwide. DPA's design ethic embodies a no-compromise attitude in the quest for quality. All products are made on-site at our factory in Denmark, giving us complete control over all aspects of manufacturing.

PRODUCT CATALOGUE

Scan the code to browse DPA's 2013 catalog.

INFORMATION

Contact
Head Office
DPA Microphones A/S
Gydevang 42-44
DK-3450 Alleroed
Denmark

T: +45 4814 2828
F: +45 4814 2700
E: info@dpamicrophones.com
W: www.dpamicrophones.com

US Sales Office
DPA Microphones, Inc.
1500 Kansas Avenue, Unit 3A
Longmont, CO 80501
USA

T: +1 303-485-1025
F: : +1 303-485-6470
E: info-usa@dpamicrophones.com

APAC Sales Office
DPA Microphones Ltd.
Unit 801-2, 8/F, Asia Orient Tower
33 Lockhart Road, Wanchai
Hong Kong

E: info-apac@dpamicrophones.com

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Craig Kallman
CEO of Atlantic Records //
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LCT Recording Series

DTP Percussion Series

MTP Performance Series

LTS Wireless Series

The new **LEWITT Sound Booth** is the perfect place to get familiar with our full range. Compare one microphone on different applications or different microphones on the same application right at www.lewitt-audio.com/sound_booth

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LEWITT

85 Years Of Innovation

Microtech Gefell manufactures an enormous range of microphones, accessories, and test and measurement systems. Now 85 years old, the company is celebrating its longevity with a new Vintage line, a microphone museum, and a renewed commitment to quality and innovation.

THE GEFELL STORY

Microtech Gefell founder Georg Neumann (left), with Georg Neumann & Co manager Erich Kühnast

Microtech Gefell's history is a fascinating one, and begins with its founding in 1928 as 'Georg Neumann & Co', by none other than Georg Neumann (the very same) and Erich Rickmann. Neumann had already made a name for himself in microphone design and, amongst other things, the new company was to pioneer the design and production of the capacitive transducer-based microphone, which we now know as the condensor microphone. The famous M7 capsule and tube-based mic got its first showing at the 1936 Olympic Games in Berlin and despite the death of Rickmann in 1938 the company went from strength to strength under Neumann's leadership. The second world war forced relocation of Georg Neumann & Co to Gefell, a town in Thuringia in the East of Germany, and while work continued there under Soviet occupation, Neumann himself relocated again and started Georg Neumann GmbH in Berlin in 1946. In the 1950s, George Neumann & Co was forced into state ownership and then in 1961 the Berlin Wall cut all official communications between the two Neumann companies. The company was then renamed VEB Mikrofontechnik Gefell and remained isolated until the fall of the Berlin wall and, sadly, 13 years after the death of Georg Neumann. The two companies never completely reunited – Sennheiser took over Georg Neumann GMBH, and a re-privatised Microtech Gefell GMBH established the 'MG' trademark.

THE NEW OLD GEFELL

Microtech Gefell had not been idle during its isolation and had remained true to the principals of its founder, innovating new microphone technologies and products, and this continues today, as Gefell's Sales & Marketing Manager, Elisabeth Kühnast, confirms:

"We're always working on new microphones with innovative technologies or special specifications. For example, the new KEM 975, which we developed together with the IRT [Institut für Rundfunktechnik] in Munich".

"That's the main aim of the company – to always try to find new features for potential new customers. We have a lot of expertise here in our company, and we can develop everything under one roof, beginning with R&D and including every technical element of a mic."

The company prides itself on being able to cater for the needs even of individual customers with a flexible production department, so special requests for specific accessories and so on can usually be accommodated. This customer-focussed outlook extends to larger contracts and the System Solutions department. Its work covers a wide range of special customer requirements: *"The KEM 975 is a really special mic, used for bigger installations in theatres, opera houses, or conference halls,"* notes Kühnast. *"In that case it's helpful to get some support from our side, to explain how they can install the mic, to measure the room to determine where they can install the mic, and so on.*

"We've also been working with the automotive industry, for example, to install test systems for measuring wheel noise, inside and outside the car. That's a big project."

Microtech Gefell manufactures almost every part of its products in-house, including the capsules, with the only exceptions being some part-populated circuit boards that are then checked and finished at the factory. The processes for manufacturing continue to uphold the standards of the firm's founder, and in many cases the process has not changed. Kühnast: *"We still produce the M7 capsules, for example, as it was done by Georg Neumann."*

Service and repair, also, is all taken care of in-house, and the company can still repair all microphones developed in Gefell, no matter how old, in most cases with original parts. Older microphones can also be upgraded by, for example, converting capsules from 12V to 48V phantom power operation.

THE CURRENT LINE-UP

Microtech Gefell makes a wide range of products, from high-quality tube-based studio condensers to noise and vibration measurement instruments and other microphones.

Microtech's UM92.1S and M92.1S large diaphragm tube microphones are based around the legendary M7 capsule, still made in Gefell, just as Georg Neumann designed it. There are two multi-pattern microphones – the UM92.1S is the multi-pattern version, using M7 capsules. Also in the tube range, the multi-pattern UM900 is particularly noteworthy as it does not require a separate power supply – it's a phantom powered tube mic. The M990 tube mic uses the modern M930 capsule.

The large diaphragm transistor-based studio range uses the M930 capsule, designed for low noise floor and wide dynamic range. There are plenty of variations, with transformer and transformerless outputs, a choice of polar patterns and stand-mounted versions,

as well as the 'UM' dual-capsule, multi-pattern models. The UM 930 Twin polar pattern features two separate outputs, enabling the recording of two polar patterns simultaneously, or post-recording polar pattern variation from the direct outputs of the two capsules.

In the small diaphragm condenser range you can choose between a number of polar patterns in the miniature and 'studio' ranges, as well as the SMS2000 modular system, with transformerless preamp and three different capsules.

The M221 small diaphragm omni uses Gefell measurement technologies to produce a metal-diaphram recording mic with some unique properties, such as an excellent transient response, accurate environmental response, and extreme climate tolerance.

To complement the recording microphone ranges, there are several high-quality multi-channel microphone arrays, including stereo ORTF and XY configurations, and the INA 5 and INA 5 R surround arrays.

For live use, Microtech Gefell makes both condenser and dynamic handheld microphones. The MD range of dynamic mics are manufactured together with Mikrofontechnik Leipzig GmbH (MTL) and currently come in three polar variations – cardioid, hyper-cardioid, and omni. The live condenser microphone range is made up of the M 900 and M 910 (cardioid and hyper-cardioid respectively) and the 'studio quality' PM 860 with a wide frequency response, low noise, and high SPL handling.

Microtech Gefell's extensive line of measurement products includes a wide modular range of capsules and preamplifiers as well as 'all in one' measurement microphones, outdoor/environmental microphones, probes, arrays, power supplies, and calibration systems. <

KEM 975 Satellite

The new KEM 975 is the successor to the KEM 970 Cardioid Plane Microphone. Developed with the Institut für Rundfunktechnik (IRT), this multi-capsule array works on the same principal as a line source speaker array and is designed for widely spread or moving sources in the horizontal plane. Its narrow vertical acceptance angle reduces reflections from surfaces, ceilings, floors, and so on.

On conference speakers' stands, for example, a KEM 975 can be placed to one side so it doesn't interfere with the direct view. Another can be mounted on the opposite side for redundancy. Even very animated delegates would be well covered by the polar pattern while stand, floor, and ceiling noise are significantly reduced.

New features for the 975 include the optional Delta Capsule, which provides an increase in the directivity at low frequencies and therefore an almost frequency-independent polar-pattern – perfect for high-quality, wide spectrum work such as choral and orchestral recordings. If you're using the KEM 975 for speech applications, the Delta Capsule can be removed for a cleaner physical profile. Other revisions include a new low-noise design, higher SPL handling, 5-pin XLR connection (instead of Tuchel), and an upgraded power supply.

85 Years Young

This year is a special one for Microtech Gefell. It has been 85 years since the original Georg Neumann & Co was formed in 1928, and since then, through many historical twists and turns, the company has remained true to its original vision of quality and innovation. It does not ignore its past, but continues to look to the future.

To celebrate this incredible milestone, Microtech Gefell is creating the Georg Neumann Museum at its headquarters in Gefell, Germany. Historic microphones manufactured by Georg Neumann KG will be on display at the location and visitors will be free to explore and learn from 85 years of audio innovation.

The opening ceremony is planned for November, 2013, to coincide with the main 85th anniversary celebrations, after which the museum will be opened to the public.

The Vintage Line

Microtech Gefell is not just renowned for its current microphones. Many of the company's legacy products have acquired legendary status and are well sought-after. To acknowledge this, they have started the Vintage range of microphones, beginning with the launch of the 'new' UM75 for the company's 75th anniversary. The latest re-issue, available now, is the famous CMV563 M7S.

www.gefell-m7.com

INFORMATION

Microtech Gefell GmbH
Address
Georg-Neumann-Platz,
07926 Gefell, Germany

W: www.microtechgefell.de
T: +49 (0)36649 882-0
F: +49 (0)36649 882-11

UK Distributor
Sound-Link ProAudio Ltd.
Bicester, Oxfordshire
OX26 2GP, UK

W: www.sound-link.co.uk
T: +44 (0) 1869 600 817

The RØDE VideoMic range has become the de-facto standard for DSLR on-camera audio

ABOUT RØDE

Founded at a time when the only recording solutions available were either incredibly expensive or poor quality, RØDE set out to change the status quo. Twenty years on and still based in Sydney, RØDE continues to manufacture some of the world's very best microphones, regardless of price.

That's The RØDE Difference

PRECISION MAKES THE RØDE DIFFERENCE

A handful of grey-haired, highly-trained engineers in pristine lab coats, tirelessly hand-crafting every microphone in between quiet cups of tea. While some companies would have you believe that this is how they 'hand make' microphones, the reality isn't nearly as glamorous. Instead, 'hand-made' usually means 'assembled by poorly paid and generally unskilled process workers'.

Now, consider The RØDE Difference. First: one of our core principles is to always be a technology leader, which means using the most advanced machinery to build our high-quality products. Our continual pursuit of excellence through innovation results in products that last a lifetime. These are concepts that other manufacturers simply cannot achieve using primitive manual processes.

There are very few premium manufacturers in Europe and the USA who understand this, and they generally outsource these components of manufacturing, making their products even more expensive.

Which leads to the second facet of RØDE's precision difference: having the technology in-house dramatically lowers our cost without sacrificing quality. Our state-of-the-art manufacturing plant in Sydney, Australia, is a unique combination of specially commissioned machinery that may have otherwise found a home in a leading German automotive manufacturer or one of Switzerland's finest watchmakers. We've adapted this technology to sculpt the best raw materials into the world's best microphones. *That's the RØDE Difference.*

PASSION MAKES THE RØDE DIFFERENCE

Here at RØDE we recognise that to make the very best microphones you need to live and breathe audio, and this shared creative vision drives our team every day.

Peter Freedman, RØDE's founder and company President: "Growing up I was always around sound and my earliest memories are being surrounded by recording and audio equipment as well as live performances in the early 1960s. We have some very clever people here at RØDE, but what we really look for in our employees is passion. I'd rather have someone working for us who sees a career in audio as their dream, who comes to work every day seeing it as an opportunity to do something great, and empower millions of like-minded creative people."

The working environment at RØDE is quite different to what you'd expect of a company of our size and international reputation. Rather than wearing uniforms and sitting in generic cubicles while we work, we maintain a casual, social atmosphere that fosters the creativity that drives us.

Our Product Development team interacts with world-renowned musicians, engineers, producers, and filmmakers on a daily basis, ensuring that the products we bring to market are the very best they can be.
That's the RØDE Difference.

COMMUNITY MAKES THE RØDE DIFFERENCE

The RØDE family consists of over 10,000 online artists (and counting!) performing over

RØDE's headquarters and manufacturing plant is based just outside of Sydney, Australia

100,000 tracks that easily combine to over 100 million online views!

Many YouTube 'superstars' have used our microphones since the start of their careers, and their success has inspired countless others to trust their vocal and instrumental talents to our microphones.

Millions of creative experiences all joined by a common thread – RØDE Microphones. *That's the RØDE Difference.*

VALUE MAKES THE RØDE DIFFERENCE

We're the good guys, leveraging our investments in manufacturing and economies of scale to bring you mics that perform better than those at several times the price. We bring our products to the market in both an ethical and environmentally conscious way.

RØDE was conceived as a brand that would make high-quality recording equipment accessible to more than just 'the chosen few'. It doesn't just make us feel good, it's good business sense. This kind of focus doesn't just happen though – it required a huge investment and a lot of risk for the company in its formative years – another reason why RØDE isn't just another cookie-cutter manufacturer. *That's the RØDE Difference.*

SUPPORT MAKES THE RØDE DIFFERENCE

We realise that a company lives and dies by its commitment to customers. That's why we're proud to offer the industry's very best customer support and product warranties.

We are the only microphone manufacturer to offer a five to 10 year warranty across our entire range of microphones. This level of confidence pleasantly surprises many customers, but for us it's simply a reflection of the quality of our design and manufacturing. We know we can offer a 10 year warranty because we are confident that our microphones will last a lifetime, thanks to the meticulous manufacturing process that only RØDE employs. You won't find any bad solders caused by an overworked, underpaid plant worker on our products!

After a chance meeting at a NAMM show way back in the 90s, London-based Source Distribution has been the exclusive UK distributor of RØDE products almost from day one, so has witnessed the meteoric rise of the brand from its genesis through to its current position at the very top of the microphone tree.

Source's Marketing Co-ordinator Alex Theakston explains: "Every year RØDE continues to be our biggest selling brand, and has proved to be absolutely recession-proof, primarily because it represents such extraordinary value for money and offers something compelling for every sector of the market – whether it's music recording, broadcast, live sound, or the growing consumer DSLR market. RØDE just has that happy knack of identifying a product that customers genuinely need – and then building it at a price that the competition doesn't seem to be able to get anywhere near."

Source sees 'the RØDE Difference' as embodying what makes RØDE special and feels it goes a long way to explaining not only how the company hits the price points it does, but also how it achieves such consistency in performance and such outstanding reliability. Theakston comments: "The beauty of RØDE's commitment to large-scale automation and quality control in their manufacturing is that we know that a RØDE microphone landing in our warehouse this month will perform absolutely identically to the same mic that arrived here last month – or even last year. That consistency gives us – and the customer – total confidence in RØDE products."

When you buy a RØDE microphone you are also buying our product service guarantee – our customer support teams are available around the clock to provide insight on pre-sales questions, technical support on product issues, and even general recording advice.

Peace of mind that your investment is protected by a skilled team of customer service professionals for many years to come. *That's the RØDE Difference.* <

The iXY is the world's first iPhone microphone capable of recording at 24-bit/96kHz

INFORMATION

RØDE
www.rodemic.com
@rodemics

RØDE Headquarters
Sydney, Australia
T: +61 2 9648 5855

RØDEWORKS Design Studio
Sydney, Australia
T: +61 2 9212 4646

RØDE Microphones LLC
Santa Barbara, USA
T: +1 805 566 7777

Quality & Innovation

Schoeps is a name that brings visions of detail, technical superiority, pristine recordings, and a commitment to its customers that is second to none. What makes a company like Schoeps tick?

Schoeps has been innovating in the field of microphones for 65 years. It started out in 1948 by serving the recording and PA markets. As well as a prototype tube microphone, tape recorders were amongst the early products. By 1949 the first Schoeps condenser microphone came into existence – the CMV50/2, with bayonet coupled capsules. In 1951, possibly the most iconic Schoeps, the CM 51/3 was released – its smaller dimensions made possible by a new tube: the Telefunken EF 94.

Schoeps tube mics continued to improve and get smaller, until the CMT 200 – the world's first phantom powered microphone. Fast forward to 1973, and the launch of the Colette range of microphones and pre-amps – a modular system that continues to be updated and augmented to this very day. It's safe to say that Schoeps microphones are some of the most respected devices available to the professional audio engineer.

HERE ARE A FEW HIGHLIGHTS...

SUPERCMIT

The SuperCMIT redefined the directional microphone when it was launched in 2010, and is enjoying enormous success in all its various applications. Unlike other digital microphones, the SuperCMIT actually uses two capsules and DSP inside the unit. This enables a higher order of directivity across a wider frequency range than conventional shotguns without a change in sound colour. The higher suppression of unwanted noise is highly desired in film and documentary, sports and theatre.

The SuperCMIT is a big step forward for the digital microphone – two capsules combine with DSP to create a super-shotgun

The SuperCMIT has been winning awards and accolades since its launch, including the 7th Annual Cinema Audio Society Technical Achievement Award for Production.

CMIT 5 U

The other shotgun in the Schoeps catalogue is the all-analogue CMIT 5. Otherwise known as 'The Blue', this mic has become well known for an incredibly smooth-sounding directionality and a balanced sonic character. Because of this,

CM51/3

The CM51/3 has become one of the most iconic images for Schoeps microphones, and still plucks at the heart strings of many veteran audio pros.

The mic was introduced in 1951 after innovations in tube design allowed Schoeps to reduce the size of the body to an amazingly slim 35mm in diameter and 240mm in length.

Though now no longer available, this legendary microphone continues to represent the uncompromising quality and innovation that Schoeps is known for, and has maintained for 65 years.

On Set For *Les Misérables*

Late last year, a movie version of the classic musical *Les Misérables*, directed by Tom Hooper, set new standards for production sound – borne out by the sheer number of awards that followed: An Academy Award for sound mixing, a BAFTA for best sound, a CAS award for sound mixing, and more. One of the biggest challenges was to capture live performance on-set – no pre-recording, no ADR. The Director, Tom Hooper, told Simon Hayes, Production Mixer: "I know that technology has moved forward a long way in the last few years; I don't know the details but I want you to use that technology to deliver a musical where the performances are sung live by the cast."

Supervising Music Editor Gerard McCann: "We did hear people outside of the production team say, 'this is impossible' - they questioned how we would be able to capture free-timed, live vocal performances of a sufficiently high standard on location, take after take, but also be able to construct a musically coherent edit in post and add a live orchestral accompaniment to it later."

To realise his ambition of getting the perfect take on-set with minimal post production, Hooper had to employ multiple cameras so that no angle would be missed.

Hayes also noted that the quality of recorded material was paramount: "One of my main aims was to deliver as natural a dynamic range as possible. We agreed that there would be no compressor/limiters used in the production sound recording chain... There were no limiters in the mics, radio transmitters, mixers, or recorders on the set of *Les Misérables*. Every vocal was captured in full dynamic range and without any EQ either."

The team did pre-production test at London's Abbey Road Studios to test how well the production equipment would stand up against more usual studio-quality microphones. "The boom microphones that we chose, that were employed by two of our boom operators at all times, were the digital Schoeps SuperCMITs," reveals Hayes. "...When the Schoeps were used on *Les Misérables* it became clear that if they were in an optimum position they could compete on a level playing field with the music studio mics at capturing high-quality vocals."

"...We also used some 'planted' Schoeps MK41 hyper cardioid capsules, sometimes in the ceilings of carriages and other places that we needed something of high quality and low profile to hide."

Based on an article that first appeared in *Audio Media*, December 2012.
For the full article, go to **www.audiomedia.com/past-issues**

as well as being ideal for all of the traditional shotgun applications, the CMIT 5 also finds itself relied upon for critical music recording applications.

COLETTE SERIES

The Colette series has been the flagship modular microphone range for Schoeps for over 35 years, and the company continues to innovate and add to the range with products such as the CMR – the microphone amplifier for connecting the MK capsules to a pocket transmitter. There are more than 20 capsules with various polar patterns and six amplifier types as well as an uncountable number of accessories like tubes and mounting and hanging devices in the Colette range.

CCM SERIES

The CCM Series of microphones is just as capable as the Colette range, but in this case it's not a modular series. It appeals to customers who want exceptional quality in a small size, making it ideal for intricate positions, surround arrays, conference pick-up, and so on.

STEREO RECORDING

Schoeps has a large selection of microphones and accessories for M/S, X/Y, Blumlein, ORTF, and A/B stereo recording, which allows the user to find the right setup for any stereo recording situation. Its M/S solutions are particularly respected, as are its stereo microphones such as the MSTC 64 U for ORFT recording or the CMXY 4U for X/Y. Schoeps stereo setups are a standard in music, film, and sports recording.

MULTI-CHANNEL ARRAYS

Schoeps offers a wide selection of practical multi-channel arrays and arrangements for the professional recordist including the Double M/S, ORTF Surround, IRT Cross, and OCT Surround systems. Due to this large variety, any application can be optimally targeted. The Schoeps engineers share their experience and competence for any music, film, documentary, sports, ambience, or live application and help to find the proper setup. <

INFORMATION

SCHOEPS Mikrofone

Schalltechnik Dr.-Ing. Schoeps GmbH
Spitalstr. 20, 76227 Karlsruhe, Germany

T:+49 721 94 32 00
W: www.schoeps.de
E: mailbox@schoeps.de

US: Redding Audio, LLC
W: www.reddingaudio.com

UK: ioCo Limited
W: www.ioco.ltd.uk

www.facebook.com/SchoepsMics

Evolution 900 Series stage microphones

Sennheiser – The Audio Specialists

For almost seventy years, the name Sennheiser has been synonymous with state-of-the-art microphones. Bands, artists, live sound engineers, recording engineers and amateurs, broadcast professionals and film crews worldwide rely on Sennheiser microphones.

WIRELESS MICROPHONES

The name Sennheiser has become synonymous with reliable RF wireless transmission, whether it's a small gig with just a few wireless mics on stage or a large broadcast event involving multi-channel systems and complex RF environments.

Sennheiser's new top-of-the-range system is Digital 9000 - a digital wireless system that can transmit completely uncompressed audio, artefact-free and with superb dynamics. The system includes the EM 9046 receiver, SKM 9000 handheld transmitter, SK 9000 bodypack transmitter and a comprehensive suite of accessories.

Targeting broadcasting professionals, (musical) theatres and high-profile live audio events, Digital 9000 sets a new benchmark in digital wireless transmission. It offers unprecedented ease of use and sound quality, with a wide range of capsules to choose from, including four dedicated 9000 Series heads.

With Digital 9000, users no longer have to calculate and circumvent intermodulation frequencies but can conveniently place their transmission frequencies in an equidistant grid. The system has been meticulously designed for the highest channel counts in today's increasingly dense frequency environment.

On the analogue side, Sennheiser offers its renowned 5000, 3000 and 2000 Series. Large touring productions, TV shows, broadcasts, and globally active bands rely on the SKM 5200-II and SKM 2000 handheld transmitters, SK 5212-II and SK 2000 bodypack transmitters, and the EM 3732-II and EM 2050 dual-channel receivers, which are setting standards in multi-channel capability and reliability.

For more than one million users worldwide, evolution wireless is their number one choice for stage and live use. Whether wireless instrument transmitters or acclaimed vocal mics, this series contains wireless solutions for almost every application. Great sound, quality workmanship, and exciting extras for up-and-coming bands, established performers, presenters, musicians, reporting teams, and PA companies.

Digital 9000, Sennheiser's top-of-the-range wireless system

To date, evolution wireless is Sennheiser's most successful radio microphone series

WIRED MICROPHONES

EVOLUTION SERIES STAGE MICROPHONES

Designed with the aim of providing a complete range of microphones for vocals and backline, evolution microphones were launched in 1998. Since then, they have become a standard on stages around the world, and are known as rugged, reliable tools for the live sound engineer. The evolution 600 line offers instrument microphones for the complete backline, while the 800 line are vocal microphones that cater for any stage situation. The most recent line, the award-winning evolution e 900 series, is the pinnacle of evolution live microphones, including both vocal and instrument microphones. The range encompasses everything from dynamic drum mics (the e 901, e 902, and e 904) to the e 906 guitar amp mic and small-diaphragm condenser models such as the e 914 and the clip-on e 908. Vocal microphones are the cardioid e 935, super-cardioid e 945 (both dynamic mics), and the e 965, a true condenser, large-diaphragm stage microphone with switchable pick-up pattern (cardioid/super-cardioid). The latest model in the evolution range is the e 835 fx, which has an effects button to conveniently control the products of vocal effects expert TC-Helicon.

THE MD RANGE OF DYNAMIC MICROPHONES

Sennheiser's rugged, easy-to-use dynamic microphones include all-time classics such as the MD 21, MD 421, and MD 441, but also reporters' microphones like the MD 42 and MD 46.

PERMANENTLY POLARISED CONDENSER MICROPHONES

Everything from professional sub-miniature clip-on microphones for use with Sennheiser's wireless technology to headset microphones and small camcorder microphones. Among the classics are the legendary MKE 2 clip-on, and the K6 Series, where the user can tailor the microphone to the recording situation by adding microphone heads of varying directivity to the basic power module. The portfolio also comprises the award-winning HSP 2 and HSP 4 headset microphones, the MKE 600 camcorder microphone, and Sennheiser's smallest clip-on, the MKE 1. The latest additions are the single-sided Earset 1 and Earset 4 mics for stage and broadcast use.

TRUE CONDENSER MICROPHONES

With the MK 4, Sennheiser has launched an extraordinary studio microphone with a shock-mounted capsule based on that of the e 965. The affordable side-address mic has a warm and direct sound ideal for vocals and speech but also suitable for guitars, guitar amps, string, and wind instruments, as well as drums and percussion.

MKH MICROPHONES

The choice for recording, broadcast, and filming specialists, Sennheiser's MKH microphones are a sophisticated class of condenser microphones, operating according to the RF principle and using a unique symmetrical push-pull transducer. They offer an unchanging acoustic impedance, extremely low distortion figures, a higher capsule output with much lower noise, and thus a very clear signal. They are uniquely insensitive to unfavourable climatic conditions, have a wide dynamic range and an excellent low-frequency response even with small capsules. Although their capsule is grounded, they possess a genuine fully floating, balanced output without the need to use a transformer.

The MK 4 excels both as a recording and a live microphone

The line comprises the MKH 8020 (omni), MKH 8040 (cardioid), MKH 8050 (super-cardioid), MKH 8060 (short gun), MKH 8070 (long gun) and the new MKH 8090 (wide cardioid), as well as the MKH 800 Twin - a double-capsule microphone with a pick-up pattern that can be remotely controlled at the mixing desk and modified during post-production.

DIGITAL MICROPHONES...

…are a sound investment in the future of audio. Simply by adding a digital module, the renowned MKH 8000 series can be turned into digital microphones. Perfectly matched to the MKH microphone heads, the MZD 8000 digital module directly 'translates' the clear, warm, and responsive sound of the microphones into the digital world, avoiding the losses or signal disruptions to which cables are prone. The microphones can be remotely controlled, allowing parameter settings such as the lowcut filter and attenuation to be adjusted via a suitable mixing desk, a portable AES 42 interface, or a standard AES 42 interface and a PC. <

The MKH 8000 Series can be used in analogue and digital environments, simply by exchanging a mic module

INFORMATION

Sennheiser electronic GmbH & Co. KG
Am Labor 1, 30900 Wedemark, Germany

T: +49 (0) 5130 6000
F: +49 (0) 5130 600 300
E: info@sennheiser.com
W: www.sennheiser.com

Sennheiser UK Ltd

T: +44 (0) 1494 551551
F: +44 (0) 1494 551550
W: www.sennheiser.co.uk

A complete list of Sennheiser subsidiaries and partners around the globe can be found at **www.sennheiser.com**

ADK MICROPHONES
www.adkmic.com
+1 503 296 9400

AEA MICROPHONES
www.wesdooley.com
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AEVOX AUDIO
www.aevox.be
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AKG
www.akg.com
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AMT
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AUDIX
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AZDEN CORPORATION
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COUNTRYMAN ASSOCIATES
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HEBDEN SOUND
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